CURRICULUM VITAE

***UMAPADA PAL**, Ph. D.*

Residencial Address: **57 Poniente 1304-2, Col. Prados Agua Azul, Puebla, Pue. 72430, Mexico.** Tel.: +52-222-2439125. E-mail: umapadapal@hotmail.com

Place and date of birth: Midnapore (West Bengal, India), 23rd January 1960.

Nationality: Indian

Marital status: **Married (with two children)**

Language ability: English (100%), Spanish (90%), Bengali (100%), Hindi (70%)

Present position: **Profesor Investigador Titular 'C' (**Full professor, since May, 1995**), Instituto de Física, Benemérita Universidad Autónoma de Puebla, 18 Sur y Av. San Claudio, Edif. 14, Ciudad Universitaria, Col. San Manuel, Puebla, Pue. 72570, México. Tel:** +52-222- 2295500 Ext. 2047; **Fax:** +52-222-2295611. E-mail: upal@ifuap.buap.mx

PROFESIONAL PREPARATION (Academic Qualifications):

* Bachelor of Science (B.Sc.) [honors in Physics], University of Calcutta, India, (1979-1982).
* Master of Science (M.Sc.) [Physics], University of Calcutta, India, (1982-1984).
* Bachelor of Education (B.Ed.), University of Calcutta, India, (1984-1985).
* Doctor of Philosophy (Ph.D.) in Science, Indian Institute of Technology (IIT), Kharagpur, India, (1985-1991). Thesis Title: *Studies on the structural, electrical, optical and opto-electronic properties of vacuum evaporated ZnTe films and fabrication of CdTe/ZnTe photodetectors.*
* Postdoctoral Fellow, Complutense University, Spain (1993-1994).
* Brain Pool Fellow, Sogang University, Seoul, Republic of Korea (2009).

APPOINTMENTS:

May 1995 – till date	Profesor Investigador Titular `C`, (full professor) Instituto de Física, Benemérita Universidad Autónoma de Puebla, Mexico.
01-03-2019 to 31-02-2020	Brain Pool Fellow, Sogang University, Seoul, Republic of Korea.
21-12-2008 to 20-12-2009	Brain Pool Fellow, Sogang University, Seoul, Republic of Korea.
20-09-2001 to 18-12-2001	JSPS Fellow, Agency of Industrial Science and Technology (AIST), Tsukuba, Japan.
14-03-1999 to 31-03-1999	AIST Fellow, National Institute of Materials and Chemical Research (NIMC), Tsukuba, Japan.
27-03-1997 to 26-06-1997	STA Fellow, National Institute of Materials and Chemical Research (NIMC), Tsukuba, Japan.

01-01-93 to 31-12-94	Posdoctoral Fellow, Instituto de Ciencias Físicas, Depto. Física de Materiales, Universidad Complutense de Madrid, Spain.
27-05-92 to 28-12-92	Junior Scientific Officer (JSO), Microelectronics Center, Indian Institute of Technology (IIT), Kharagpur, India.
04-11-91 to 30-04-92	Senior Research Assistant (SRA), Microelectronics Center, Indian Institute of Technology (IIT), Kharagpur, India.
01-09-90 to 30-10-91	Research Scientific Staff (project), Department of Physics and Meteorology, Indian Institte of Technology, Kharagpur, India.
Specialization:	Nanostructured Materials (Semiconductors, Metals, and Ceramics); Thin films; Plasmonics, Structural, Optical, Electrical, and Opto-electronic properties; Catalysis, Photocatalysis, Solar cells, Sensors (chemical and biological), Artificial Photosynthesis.

Areas of Research Interest:

Nanostructured materials (semiconductors, ceramics, metallic nanostructures, and nanocomposites), thin films (metal, II-VI semiconductors), structural, optical, electrical, magnetic, and optoelectronic properties. Optoelectronic, Catalytic, Photocatalytic, Plasmonic, and Biomedical applications.

EXPERTISE:

Syntesis of nanostructures (metals, semiconductors, ceramics) by physical and chemical techniques; high-vacuum deposition techniques. Materials characterization by XRD, SEM, TEM, HRTEM, XPS, PL, CL, CL-SEM, FTIR, Raman, and UV-Vis spectroscopy techniques. Operation of all high vacuum and ultra-high vacuum systems.

Administrative activities:

1. University Academic Council member (Subtitute), BUAP, 2001-2002.
2. Internal evaluator of the DES (Dependencia de Educacion Superior) and PROFOCIE (Programa de Fortalecimiento de la Calidad en Instituciones Educativas), BUAP. 2003, 2004.
3. Institutional Council Member, IFUAP, 2005-2007.
4. Postgraduate coordinator, Materials Science Program, Institute of Physics, BUAP. February 2010 – 2014.
5. Institutional Council Member, IFUAP, 2013-2016.

Human Resource Development: 64 (11 postdoctoral, 15 Doctoral, 19 Master, 19 Bachelor) thesis terminated. 2 master's and 1 bachelor's thesis in progress.

Concluded:

1. Name of the student	**Gopal Krishna Bej**
Degree obtained	***Master of Science in Physics***
Institution	Vidyasagar University (Midnapore, India)
Title of the Thesis	**Preparation of PbS thin films for solar absorbers**
Date of Examination	August 1992.
Thesis directors:	***U. Pal and P.C. Jana***
2. Name of the student	**Soumitra Saha**
Degree obtained	***Master of Science in Physics***
Institution	Vidyasagar University (Midnapore, India)
Title of the Thesis	**Structural and optical characterization of chemically deposited PbS thin films.**
Date of Examination	August 1992.
Thesis directors:	***U. Pal and P.C. Jana***
3. Name of the student	**Jesús García-Serrano**
Degree obtained	***Master of Science*** (in Materials Science Program) (***with honorific mention by BUAP***)
Institution	Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis	**Estudio micro-estructural y ópticas de compositos de Si/ZnO *(Studies of micorstructural and optical properties of Ai/ZnO composites).***
Date of Examination	24 de Agosto, 1999.
Thesis director:	***U. Pal and G. Martinez Montes***
	(Best master thesis award by ¨*Sociedad Mexicana de la Ciencia de Superficies yVacio, Mexico*¨, *2000)*
4. Name of the student	**Alejandro Bautista Hernández**
Degree obtained	***Master of Science*** (in Materials Science Program)
Institution	Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis	**Propiedades ópticas de nanoparticulas metálicas y Semiconductoras *(Optical properties of metallic and semiconducting nanoparticles)*.**
Date of Examination	January 19, 2000.
Thesis director:	***U. Pal and L. Meza Montes***
	(Best master thesis award by "*Sociedad Mexicana de Ciencia de Superficies y Vacio, Mexico", 2001)*
5. Name of the student	**Gildardo Casarrubia Segura**
Degree obtained	***Bachelor of Science*** (in Electronics)
Institution	Faculty of Electrinic Science, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **La influencia del hidrógeno en la luminiscencia de películas amorfas de óxido de silicio *(The influence of hydrogen on the luminescence of amorphous silicon oxide films).***

Date of Examination October 17, 2000.

Thesis director: ***U. Pal, F. Chávez, and Y. E. Bravo***

6. Name of the student **Manuel Herrera Zaldívar**

Degree obtained ***Doctorate*** (in Materials Science program) (***with honorific mention***)

Institution Instituto de Física, Benemérita Universidad Autónoma de Puebla, Puebla, Mexico.

Title of the Thesis **Estudio de propiedades ópticas y electrónicas del GaN Por técnicas de microscopia electrónica de barrido y microscopia túnel de barrido *(Study of optical and electronic properties of GaN through scanning electron microscopy and scanning tunneling microscopy techniques).***

Date of Examination March 23, 2001.

(Honorific Mention for **"*Premio IIM-UNAM Certamen Nacional 2001*",** National University of Mexico)

Thesis director: ***P. Fernandez, J. Piqueras Noriega, U. Pal***

7. **Name of the student** **Odilón Vázquez Cuchillo**

Degree obtained ***Master of Science*** (in Materials Science Program)

Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Preparación y caracterización de nano-compositos Cu/ZnO *(Preparation and characetrization of Cu-ZnO nanocomposites)***.

Date of Examination October 17, 2001.

(Best master thesis award by "*Sociedad Mexicana de Ciencia de Superficies y Vacio, Mexico", 2002)*

Thesis director: ***U. Pal***

8. **Name of the student** **Gildardo Casarrubia Segura**

Degree obtained ***Master of Science*** (in Semiconductors)

Institution Center of Electronic and Semiconductor Devices, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Síntesis y caracterización de nano-compositos Ge/ZnO *(Synthesis and characterization of Ge/ZnO nanocomposites).***

Date of Examination May 31, 2002.

Thesis director: ***U. Pal and O. Zárate Corona***

9. **Name of the student** **Sandra Santiago Asoiazu, and Jaime Ojeda Morales**

Degree obtained ***Matesters in orthodontics***

Institution Faculty of Estomatology, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Efectos del electromagnetismo en el movimiento Ortodóntico *(Effect of electromagnetism on orthodontic movements).***

Date of Examination July 24, 2002.

Thesis director: **J. Vega Galina, H. Chávez Oseki, and *U. Pal***

10. **Name of the student** **José Francisco Sánchez Ramírez**
Degree obtained ***Doctorate in Chemistry*** (in Chemical Science Program)
Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Nanopartículas Metalicas: Síntesis, Characterización y Aplicación en Celdas de Combustible *(Metal nanoparticles: Synthesis, characterization and Fuel Cell application).***
Date of Examination October 12, 2004.
(Awarded with honorific mention as the best doctoral thesis by "***The Mexican Society of Science and technology of Surfaces and Vacuum***", October 2005.
Thesis director: ***U. Pal***

11. **Name of the student** **Eva Aguila Almanza**
Degree obtained ***Master of Science*** (in Materials Science Program)
Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Síntesis y caracterización estructurales y ópticas de nanocompositos Au/ZnO *(Synthsis, structural and optical characterization of Au/ZnO nanocomposites).***
Date of Examination March 1, 2005.
Thesis director: ***U. Pal***

12. **Name of the student** **Coraabdi Luna Perez**
Degree obtained ***Bachelor of Science*** (Chemical Engineering)
Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Sintesis y caracterización de nanoparticulas bimetalicas de Ru-Pt para aplicaciones en Celdas de Combustible *(Synthesis and characterization of Ru-Pt bimetallic nanoparticles for applications in fuel cells)*.**
Date of Examination October 7, 2005.
Thesis director: ***U. Pal***

13. **Name of the student** **Isaac Moreno Preza**
Degree obtained ***Bachelor of Science*** (in Chemical Engineering)
Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Síntesis de nanoparticulas estables de Ru-Pt y su evaluación electro-catalitica para su aplicación en celda de combustible *(Synthesis of stable Ru-Pt nanoparticles and their electrocatalytic evaluation for application in fuel cells).***
Date of Examination March 22, 2006.

Thesis director: ***U. Pal***

14. **Name of the student** **Jesus Garcia Serrano**
Degree obtained ***Doctorate*** (in Materials Science Program) (***with honorific mention by BUAP)***
Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Síntesis de nuevos polímeros de intercambio iónico para aplicaciones en celda de combustible y formación de nanopartículas metálicas** ***(Synthesis of new ion-exchange polymer for applications in fuel cells and metallic nanoparticle growth).***
Date of Examination October 6, 2006.
Thesis director: ***U. Pal***

15. **Name of the student** **Elizabeth Navarro Ceron**
Degree obtained ***Bachelor of Science*** (in Chemical Engineering)
Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Síntesis de nanoparticulas de Óxido de Zinc (ZnO)** ***(Synthesis of Zinc Oxide (ZnO) nanoparticles).***
Date of Examination **October 13, 2006.**
Thesis director: ***U. Pal***

16. **Name of the student** **Delfino Cornejo Monroy**
Degree obtained ***Master of Science*** (in Advanced Technology)
Institution CICATA-IPN, Lagarias, Mexico.
Title of the Thesis **Efectos de los parámetros de deposicion sobre las propiedades de películas delgadas de ZnO** ***(Effects of deposition parameters on the properties of ZnO thin films).***
Date of Examination December 13, 2006.
Thesis director: ***J.F. Sánchez Ramirez and U. Pal***

17. **Name of the student** **Julio Martínez García**
Degree obtained ***Bachelor of Science*** (in Chemical Engineering)
Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Caracterizacion de Nanoestructuras triangulares de ZnO por CL-SEM** ***(Characterization of triangular ZnO nanostructures by CL-SEM).***
Date of Examination January 30, 2007.
Thesis director: ***U. Pal and M. Herrea Zaldivar***

18. **Name of the student** **Raúl Sánchez Zeferino**
Degree obtained ***Bachelor of Science*** (in Chemical Engineering)
Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Síntesis y caracterizacion Luminiscente de Nanoparticulas de SnO_2** ***(Synthesis and luminescence characterization of SnO_2 nanoparticles).***

Date of Examination February 6, 2007.

Thesis director: ***U. Pal*** *and* ***M. Herrera Zaldivar***

19. **Name of the student** **Samuel Alejandro Lozano Morales**

Degree obtained ***Bachelor of Science*** (in Chemical Engineering)

Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Sintesis y caracterizacion de Nanoestructuras de SnO_2** ***(Synthesis and characterization of SnO_2 nanostructures).***

Date of Examination February 16, 2007.

Thesis director: ***U. Pal***

20. **Name of the student** **Tizoc Fernando Huerta Garcia**

Degree obtained ***Master of Science*** (In Materials Science Program)

Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Síntesis Sonoquimica de Nanoparticulas de Yb** ***(Sonochemical synthesis of Yb nanoparticles)*****.**

Date of Examination February 08, 2007.

Thesis director: ***U. Pal***

21. **Name of the student** **Ma. De Lourdes Ruiz Peralta**

Degree obtained ***Master of Science*** (Materials Science Program)

Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Síntesis de Nanoparticulas Bimetálicas de Au-Pd y su aplicación para el crecimiento de nanoestructuras de Cu por tratamiento térmico** ***(Synthesis of Au-Pd bimetallic nanoparticles and their application for the growth of Cu nanostructures through thermal treatment)*****.**

Date of Examination March 10, 2008.

Thesis director: ***U. Pal***

22. **Name of the student** **Erick Gómez Hernández**

Degree obtained ***Master of Science*** (in NEMS Program)

Institution Universidad Popular Autonoma del Estado de Puebla (UPAEP), Puebla, Mexico.

Title of the Thesis **Síntesis y Caracterización de Nanocompositos Ag-TiO_2 y su Aplicación como Fotocatalizador** ***(Synthesis and Characterization of Ag-TiO_2 nanocomposites and their application as phtocatalyst)*****.**

Date of Examination 23 May, 2008.

Thesis director: ***U. Pal***

23. **Name of the student** **Mou Pal**
Degree obtained ***Doctorate*** (in Applied Science)
Institution CICAAP, Autonomous University of Morelos State (UAEM), Cuernavaca, Mexico.
Title of the Thesis **Síntesis Controlada de Nanopartículas de TiO_2, y TiO_2: Yb para Aplicaciones Optoelectronicas** ***(Controlled synthesis Of TiO_2 and TiO_2: Yb nanoparticles for optoelectronic applications).***
Date of Examination June 08, 2008.
Thesis director: ***P. Santiago Jacinto*** *and* ***U. Pal***

24. **Name of the student** **Mirna Lopez Fuentes**
Degree obtained ***Doctorate*** (in Materials Science Program)
Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Síntesis y Estabilización de Nanopartículas de Oro** ***(Synthesis and stabilization of gold nanoparticles).***
Date of Examination September 26, 2008.
Thesis director: ***U. Pal*** *and* ***J.F. Rivas Silva***

25. **Name of the student** **Filiberto Tlalpan Valdez**
Degree obtained ***Bachelor of Science*** (in Chemical Engineering)
Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Síntesis de Nanoestructuras de SnO_2 con diferentes morfologías por metodo Hidrotérmico** ***(Synthesis of SnO_2 nanstructures of different morphologies using hydrothermal method).***
Date of Examination November 21, 2008.
Thesis director: ***U. Pal*** *and* ***M. Pal***

26. **Name of the student** **Alejandro Escobedo Morales**
Degree obtained ***Doctorate*** (in Materials Science Program) **(*with honorific mention)***
Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.
Title of the Thesis **Síntesis y Caracterización de ZnO Nanoestructurado dopado con In, Ga y Sb para Aplicaciones Optoelectrónicas** ***(Synthesis and characterization of ZnO nanostructures doped with In, Ga, and Sb for optoelectronic applications).***
Date of Examination December 17, 2008.
(Awarded as best doctoral thesis by "The Mexican Society of Science and Technology of Surface and Materials", 2009).
Thesis director: ***U. Pal***

27. **Name of the student** **Natalia Morales Flores**
Degree obtained ***Master of Science*** (in Materials Science Program)

Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Síntesis de Nanopartículas de ZnO y Pt/ZnO asistidas por polímero triton X-100 y sus aplicaciones en Fotocatálisis *(Triton-assited synthesis of ZnO and Pt/ZnO nanoparticles and their application in photocatalysis).***

Date of Examination January 21, 2010.

Thesis director: ***U. Pal** and **E. Sánchez Mora***

28. **Name of the student** **Rodrigo Saavedra Rosiles**

Degree obtained ***Master of Science*** (in Materials Science Program)

Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Preparación de Nanopartículas de SnO_2 dopados con Pt para Aplicaciones Ambientales (Catálisis)** ***(Preparation of Pt-doped SnO_2 nanoparticles for ambiental (catalysis) applications).***

Date of Examination February 26, 2010.

Thesis director: ***U. Pal** and **G. Corro Hernández***

29. **Name of the student** **Tlatoani Flores Arroyo**

Degree obtained ***Master of Science*** (in Materials Science Program)

Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Estudio de la instabilidad luminiscente en silicio poroso** ***(Study of luminescence instability in porous silicon).***

Date of Examination July 23, 2010.

Thesis director: ***A. Mendez Blas and U. Pal***

30. **Name of the student** **Moisés Ocampo Fernández**

Degree obtained ***Doctorate*** (in Materials Science Program)

Institution Instituto of Basic and Engineering Science, Autonomous University of Hidalgo, Pachuca, Hidalgo, Mexico.

Title of the Thesis **Síntesis y Caracterización de Nuevos Monómeros y Polímeros con Grupos de Ácido Fosfónico *(Synthesis and characterization of monomers and polymers with Phosphonic acid groups).***

Date of Examination November 22, 2010.

Thesis director: ***J. García Serrano** and **U. Pal***

31. **Name of the student** **Celia Lizeth Gómez Muñoz**

Degree obtained ***Master of Science*** (in Materials Science Program)

Institution Institute of Physics, Autonomous University of Puebla, Mexico.

Title of the Thesis **Fabricación de Nanopartículas Magnéticas Mono-Dispersas protegidas por Grafíto *(Fabrication of monodispersed magnetite nanoparticles protected by graphite)*.**

Date of Examination February 2, 2011.

Thesis director: ***U. Pal***

32. **Name of the student** **Federico Ramírez Vergara**

Degree obtained ***Bachelor of Science*** (in Materials Engineering program)

Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Mexico.

Title of the Thesis **Efecto de la incorporación de nanoparticulas de ZnO sobre las propiedades estructurales y ópticas de la Faujasita NaY *(Effect of ZnO nanoparticle incorporation on the structural and optical properties of NaY faujasite)*.**

Date of Examination October 28, 2011.

Thesis director: ***A. Escobedo Morales*** *and* ***U. Pal***

33. **Name of the Student** **Araceli Hernández Granados**

Degree obtained ***Bachelor of Science*** (in Industrial Engineering)

Institution Faculty of Chemical Science and Engineering, Autonomous University of Morelos State, Cuernavaca, Mexico.

Title of the Thesis **Propiedades fotoluminiscentes de nanopartículas de óxido zinc embebidos en silicio poroso *(Photoluminescent properties of zinc oxide nanoparticles embedded in porous silicon)*.**

Date of termination March 22, 2012.

Thesis director: ***V. Agarwal*** *and* ***U. Pal***

34. **Name of the Student** **Ma. De Lourdes Ruiz Peralta**

Degree obtained ***Doctorate*** (in Materials Science Program)

Institution Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.

Title of the Thesis **Síntesis de nanocompositos de ZnO/M (M = Ag y Au) por irradiación de microondas *(Synthesis of ZnO/M (M = Ag and Au) nanocomposites through microwave irradiation)*.**

Date of Examination July 19, 2012.

Thesis director: ***U. Pal*** *and* ***J. Gracía Serrano***

35. **Name of the Student** **Raul Sanchez Zeferino**

Degree obtained ***Doctorate*** (in Materials Science Program)

Institution Institute of Physics, Autonomous University of Puebla, Mexico.

Title of the Thesis **Caracterización luminiscente de nanopartículas de ZnO y de SnO_2 dopadas y nodopadas *(Luminescent characterization of doped and undoped ZnO and SnO_2 nanoparticles)*.**

Date of Examination October 05, 2012.

Thesis director: ***U. Pal*** *and* ***M. Barboza Flores***

36. **Name of the Student** **Abraham Palomec Garfias**
Degree obtained ***Master of Science*** (in Materials Science Program)
Institution Institute of Physics, Autonomous University of Puebla, Mexico.
Title of the Thesis **Influencia de Nanopartículas de sílice sobre la tensión superficial de agua en presencia del surfactante SDS *(Influence of silica nanoparticles on the Surface tension of wáter in presence of SDS surfactant)*.**
Date of Examination January 29, 2014.
Thesis director: ***C. Marquez Beltrán*** *and* ***U. Pal***

37. **Name of the Student** **Diego Leon Sanchez**
Degree obtained ***Bachelor of Science*** (in Optoelectronics Program)
Institution Faculty of Electronic Science, Autonomous University of Puebla, Mexico.
Title of the Thesis **Estudio del efecto de dopamiento con metales de los grupos II, III y IV en la morfología y propiedades ópticas de nanopartículas de In_2O_3 crecidas por el método VS *(Studies on the effect of group II, III and IV metal doping on the morphology and optical properties of VS grown In_2O_3 nanoparticles)*.**
Date of Examination May 14, 2014.
Thesis director: ***U. Pal***

38. **Name of the Student** **Natalia Morales Flores**
Degree obtained ***Doctorate*** (in Semiconductor Devices)
Institution Semiconductor Device Research center, Autonomous University of Puebla, México.
Title of the Thesis **Crecimiento de nanoestructuras de Óxido de Zinc asistidas por irradiación ultrasónica y su aplicación en fotocatálisis *(Fabrication of Zinc oxide nanostructures by ultrasonic irradiation and their photocatalytic applications)*.**
Date of Examination October 3, 2014
Thesis director: ***U. Pal*** *and* ***R. Galeazzi***

39. **Name of the Student** **Mariana Colón Figuera**
Degree obtained ***Bachelor of Science*** (Materials Engineering)
Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Mexico.
Title of the Thesis **Crecimiento de nanopartículas de oro por el método Turkevich-Frens y caracterización de sus propiedades ópticas *(Growth of gold nanoparticles by Turkevich-Frens method and their optical characterization)*.**
Date of Examination March 23, 2015
Thesis director: ***U. Pal***

40. **Name of the Student** **Sergio Isaac Uribe Madrid**
Degree obtained ***Doctorate*** (in Materials Science)

Institution Institute of Physics, Autonomous University of Puebla (BUAP), Mexico.

Title of the project **Fabricación de nanoestructuras compuestas de Fe_3O_4@meso-SiO_2 para aplicaciones biológicas *(Fabrication of Fe_3O_4@meso-SiO_2 composite nanostructures for biological applications).***

Date of termination April 24, 2015.

Thesis director: ***U. Pal***

41. **Name of the Student** **Alejandra López Vazquez**

Degree obtained ***Bachelor of Science*** (Physics)

Institution Faculty of Physics and Mathematical Science, Autonomous University of Puebla, Mexico.

Title of the Thesis **Crecimiento de nano-alambres de óxido de zinc verticalmente alineados usando el método sol-gel hidrotermal *(Growth of aligned zinc oxide nanowires using sol-gel hydrothermal method)*.**

Date of Examination July 10, 2015

Thesis director: ***U. Pal***

42. **Name of the Student** **Yessica Torres Luna**

Degree obtained ***Bachelor of Science*** (Mechatronics)

Institution Faculty of Electronic Science, Autonomous University of Puebla, Mexico.

Title of the Thesis **Síntesis controlada de las nanopartículas de $CuSbS_2$ para aplicaciones fotovoltaicas *(Controlled synthesis of CuSbS2 for photovoltaic applications).***

Date of Examination February 10, 2016.

Thesis director: ***M. Pal*** *and* ***U. Pal***

43. **Name of the Student** **Dafne Aguilar Terrones**

Degree obtained ***Bachelor of Science*** (Chemical Engineering)

Institution Faculty of Chemical Engineering, Autonomous University of Puebla, Mexico.

Title of the Thesis **Fabricación de celdas solares fotoelectroquímicas tipo "Grätzel": comparación entre diferentes fuentes de TiO_2 poroso y nanoestructurado *(Fabrication of photoelectrochemical solar cells of Grätzel type: Comparison between different sources of porous nanostructured TiO_2)*.**

Date of Examination February 18, 2016.

Thesis director: ***J. Villanueva Cab*** *and* ***U. Pal***

44. **Name of the Student** **Dulce Natalia López Castillo**

Degree obtained ***Doctorate*** *in Materials Science* (**(*with honorific mention)***

Institution Institute of Physics, Autonomous University of Puebla, Mexico.

Title of the Thesis **Uso de hongos como bioplantillas vivas para la fabricación de estructuras metálicas 1D (*Use of fungus as living biotemplate for fabricating metallic 1D structures*).**

Date of Examination June 28, 2016.

Thesis director: ***U. Pal***

45. **Name of the Student** **José Luis Montaño Priede**
Degree obtained ***Doctorate in Materials Science*** (*with honorific mention Ad Honorum)*
Institution Institute of Physics, Autonomous University of Puebla, Mexico.
Title of the Thesis **Fabricación de Nanopartículas Compuestas Tipo Multicapa y Estudio de sus Propiedades Ópticas** ***(Fabrication of multilayered composite nanoparticles and the study of their optical properties).***
Date of Examination October 27, 2017.
Thesis director: ***U. Pal***

46. **Name of the Student** **Jesus Alberto Ramos Ramón**
Degree obtained ***Doctorate in Materials Science***
Institution Institute of Physics, Autonomous University of Puebla, Mexico.
Title of the Thesis **Fabricación de nanoestructuras unidimensionales de In_2O_3 dopadas y no dopadas por la técnica Vapor-Líquido-Sólido para aplicación en dispositivos optoelectrónicos** ***(Fabrication of doped and undoped unidimensional In_2O_3 nanostructures by Vapor-Liquid-Solid technique for optoelectronic devices).***
Date of Examination March 8, 2018.
Thesis director: ***U. Pal***

47. **Name of the Student** **Aarón Armando Ramirez Daza se la Torre**
Degree obtained ***Bachelor in Mechatronic Engineering***
Institution Faculty of Electronic Science, Autonomous University of Puebla, Mexico.
Title of the Thesis **Growth of Ga, Al, and In doped ZnO nanowires by hydrothermal method and their defect evaluation** ***(Crecimiento de nanoalambres de ZnO dopados con Ga, Al e In por el método hidrotermal y su evaluación de defectos).***
Date of Examination May 8, 2018.
Thesis director: ***U. Pal***

48. **Name of the Student** **Francisco Cancino Gordillo**
Degree obtained ***Masters in Materials Science***
Institution Institute of Physics, Autonomous University of Puebla, Mexico.
Title of the Thesis **Síntesis y caracterización de nanopartículas calcogenuras del sistema Cu-Zn-Sn-Ge** (Synthesis and characterization of Cu-Zn-Sn-Ge chalcogenide nanoparticles)
Date of Examination December 4, 2018.
Thesis director: ***U. Pal***

49. **Name of the Student** **Selma Kuri Hernandez**
Degree obtained ***Masters in Materials Science***
Institution Institute of Physics, Autonomous University of Puebla, Mexico.
Title of the Thesis **Study of the effect of oxygen vacancy content on the photocatalytic activity of TiO_2 nanoparticles.**

Date of Examination February 9, 2022.
Thesis director: ***U. Pal***

50**. Name of the Student** **Angel Octavio Paredes Flores**
Degree obtained ***Bachelor in Physics***
Institution Faculty of Physics and Mathematical Physics, Autonomous University of Puebla, Mexico.
Title of the Thesis **Synthesis of r-TiO_2/r-GO nanocomposite and their characterizations for photocatalytic applications** (Sintesis de nanocompositos de r-TiO_2/r-GO y sus caracterizaciones para aplicaciones fotocataliticas).
Date of Examination **May 26, 2022.**
Thesis director: ***U. Pal & Claudia Oliva Mendoza Barrera***

51. **Name of the Student** **Margarita María Dolores**
Degree obtained ***Bachelor in Physics***
Institution Faculty of Physics and Mathematical Physics, Autonomous University of Puebla, Mexico.
Title of the Thesis **Fabrication of plasmonic Au/CeO_2 nanocomposite and its structural and morphological characterizations** (*Fabricación de nanocompositos plasmonicos Au/CeO_2 y su caracterizción morfologica y estructural*).
Date of Examination **February 9, 2022.**
Thesis director: ***U. Pal & P. Mendoza Méndez***

52. **Name of the Student** **Francisco Enrique Cancino Gordillo**
Degree obtained ***Doctorate in Science (in Materials Science speciality)***
Institution Institute of Physics, Autonomous University of Puebla, Mexico.
Title of the Thesis **Application of $Cu_2ZnSn_{1-x}Ge_xS_4$ nanoparticles in hole transpot layers in lead-based perovskite solar cells** (*Aplicación de nanopartículas de $Cu_2ZnSn_{1-x}Ge_xS_4$ como transportadores de huecos en celdas solares de perovskita basadas en plomo*)
date of Examination April 19, 2023.
Director of the thesis: ***U. Pal*** and ***J. Villanueva Cab***

53. **Name of the Student** **Miguel Angel Garcia Garcia**
Degree obtained ***Bachelor in Physics*** (Applied Physics)
Institution Faculty of Physics and Mathematical Physics, Autonomous University of Puebla, Mexico.
Title of the Thesis **Fabrication of GO/r-TiO_2 nanocomposite and its evaluation of**

degradation of organic dye (*Fabricación de nanocompuestos de GO/r-TiO_2 y su evaluación para degradación fotocatalitica de tinte orgánico*).

Date of Examination **September 15, 2023.**
Thesis director: ***U. Pal*** and ***Martha Alicia Palomino Ovando***

54. **Name of the Student** **Dr. Carol Perez Casas**
Research Program ***Post-Doctoral Fellow,*** project #46269 (SEP-CONACyT)
Title of the project **Novel metal oxide nanostructures for optoelectronic and radiation dosimetry applications**.
Date of termination May 31, 2006.
Supervisor: ***U. Pal***

55. **Name of the Student** **Dr. Juan Andres Reyes Nava**
Research program ***Post-Doctoral Fellow*** of CONACyT (2008)
Title of the Project **Estudio Teórico-Experimental de las propiedades estructurales, dinámicas (proceso de segregación, y difusión) de nanopartículas puras y binarias de metales nobles y de transición *(Teoretical and experimental studyies of structure and dynamics (segregation and diffusion) of pure and binary nanoparticles of noble and transtion metals)*.**
Starting date May 1, 2008.
Date of termination April 30, 2009.
Supervisor: ***U. Pal***

56. **Name of the Student** **Dr. Ovidio Yordanis Peña Rodríguez**
Research program ***Post-Doctoral Fellow***, Project #46269 (SEP-CONACyT)
Title of the Project **Obtención y caracterización de nanocúmulos de cobre en una matriz de ZnO por implantación de iones *(Obtention and characterization of nanoclusters of copper in a ZnO matrix by ion-implantation)*.**
Starting date September 1, 2007.
Date of termination June 30, 2008.
Supervisor: ***U. Pal***

57. **Name of the Student** **Dr. Armando Perez Centeno**
Research program ***Post-Doctoral Fellow*** in the Project # # 46269 (SEP-CONACyT)
Title of the Project **Synthesis and Luminescence Properties of Metal Oxide nanostructures *(Synthesis and luminescence properties of metal oxide nanostructures)*.**
Starting date September 1, 2007.
Date of termination June 30, 2008.
Supervisor: ***U. Pal***

58. **Name of the Student** **Dr. Mohan Kumar Naidu Pulleparthi**
Research program ***Post-Doctoral Fellow*** in the Project # CB-2010/151767 (CONACyT)

Title of the Project **Fabrication of composite structures based on magnetic nanoparticles for biological application.**
Starting date January 1, 2013.
Date of termination June 30, 2013.
Supervisor: ***U. Pal***

59. **Name of the Student** **Dr. Alberto Sandoval**
Research program ***Post-Doctoral Fellow*** in the Project # CB-2010/151767 (CONACyT)
Title of the Project **Fabrication of composite nanostructures for ambiental applications**
Starting date July 1, 2013.
Date of termination June 30, 2014.
Supervisor: ***U. Pal***

60. **Name of the Student** **Dr. Manuel Jesus Rodriguez Perez**
Research program ***Visiting Professor, IFUAP***
Title of the Project **Fabrication of graphene and reduced graphene–metal nanocomposites for ambiental applications.**
Starting date March 1, 2016.
Date of termination August 31, 2016.
Supervisor: ***U. Pal***

61. **Name of the Student** **Dr. Sudip Mondal**
Research program ***Post-Doctoral Fellow*** (sponsored by PROFOCIE, Sec. Education, Mexico)
Title of the Project **Surface modification of magnetic hydroxyapatite for targeted drug delivery in affected tissues.**
Starting date August 1, 2015.
Date of termination March 31, 2017.
Supervisor: ***U. Pal***

62. **Name of the Student** **Dr. Jose Luis Ortiz Quiñones**
Research program ***Post-Doctoral Fellow*** (sponsored by PROFOCIE, Sec. Education, Mexico)
Title of the Project **Fabrication of metal ferrite nanostructures by solution combustion process and their structural, optical, and magnetic characterization.**
Starting date October 1, 2017.
Date of termination September 30, 2018.
Supervisor: ***U. Pal***

63. **Name of the Student** **Dr. Jose Luis Ortiz Quiñones**
Research program ***Post-Doctoral Fellow*** (sponsored by CONACyT, Mexico)
Title of the Project **Design and fabrication of superluminescent plasmonic nanophosphors.**

Starting date December 1, 2019.
Date of termination November 30, 2021.
Supervisor: ***U. Pal***

64. **Name of the Student** **Dr. Alba Arena Hernandez**
Research Program ***Post-Doctoral Fellow*** (sponsored by CONACyT, Mexico)
Title of the project **Development of SERS substrates utilizing Au, Ag and Cu dendrites for detecting organic molecules** (Desarrollo de sustratos SERS para detección de moléculas orgánicas utilizando dendritas de Ag, Au y Cu fabricadas electroquímicamente).
Starting date October 1, 2022.
Date of termination September 30, 2024.
Supervisor: ***U. Pal***

Thesis in Progress

1. **Raymundo López Cuevas** (Bachelor in Science, Faculty of Physics and Mathematical Physics, BUAP).
2. **Armando García Aguilar** (Master in Materials Science, Institute of Physics, BUAP).
3. **José Francisco E. Arriola Oliva** (Master in Renewable Energy, Institute of Science, BUAP)

Summary of human resources development

Student name	Grade obtained	Year
Gildardo Casarrubia Segura	*Bachelor of Science (Electronic Science, BUAP)*	2000
Coraabdi Luna Pérez	*Bachelor of Science (Chemical Engineering, BUAP)*	2005
Isaac Moreno Preza	*Bachelor of Science (Chemical Engineering, BUAP)*	2006
Elizabeth Navarro Cerón	*Bachelor of Science (Chemical Engineering, BUAP)*	2006
Julio Martínez García	*Bachelor of Science (Chemical Engineering, BUAP)*	2007
Raúl Sánchez Zeferino	*Bachelor of Science (Chemical Engineering, BUAP)*	2007
Samuel Alejandro Lozano Morales	*Bachelor of Science (Chemical Engineering, BUAP)*	2007
Filiberto Tlalpan Valdez	*Bachelor of Science (Chemical Engineering, BUAP)*	2008
Federico Ramírez Vergara	*Bachelor of Science (Chemical Engineering, BUAP)*	2011
Araceli Hernández Granados	*Bachelor of Science (Industrial Engineering, CIICAp, UAMor)*	2012
Diego León Sánchez	*Bachelor of Science (Electronic Science, BUAP)*	2014

Mariana Colón Figuera	*Bachelor of Science (Materials Engineering, BUAP)*	2015
Alejandra López Vázquez	*Bachelor of Science (Physics, BUAP)*	2015
Yessica Torres Luna	*Bachelor of Science (Mechatronics, BUAP)*	2016
Dafne Aguilar Terrones	*Bachelor of Science (Chemical Engineering, BUAP))*	2016
Aarón Armando Ramirez Daza de la Torre	*Bachelor of Science (Mechatronics, BUAP)*	2018
Angel Octavio Paredes Flores	*Bachelor of Science (Physics, BUAP)*	2022
Margarita María Dolores	*Bachelor of Science (Physics, BUAP)*	2022
Miguel Ángel García García	*Bachelor of Science (Physics, BUAP)*	2023
Total Bachelor thesis	***19***	
Gopal Krishna Bej	*Master of Science (Physics, Vidyasagar Univ., India)*	1992
Soumitra Saha	*Master of Science (Physics, Vidyasagar Univ., India)*	1992
Jesús García-Serrano	*Master of Science (Materials Science, IFUAP)* ***Honorific mention, BUAP;*** **Best Thesis Award,** ***Mexican Society of Surface and Vacuum Science, Mexico, 2000.***	1999
Alejandro Bautista Hernández	*Master of Science (Materials Science, IFUAP)* **Best Thesis Award by** ***the Mexican Society of Surface and Vacuum Science*****, Mexico, 2001.**	2000
Odilón Vázquez Cuchillo	*Master of Science (Materials Science, IFUAP)* **Best Thesis Award by** ***the Mexican Society of Surface and Vacuum Science*****, México, 2002.**	2001
Gildardo Casarrubia Segura	*Master of science (Semiconductor Devices, BUAP)*	2002
Sandra Santiago Asoiazu, and Jaime Ojeda Morales	*Master in orthodontics (HUP, BUAP)*	2002
Eva Aguila Almanza	*Master of Science (Materials Science, IFUAP)*	2005
Delfino Cornejo Monroy	*Master of Sciece (Materials Engineering, CICATA-IPN, Lagarias, México)*	2006
Tizoc Fernando Huerta Garcia	*Master of Science (Materials Science, IFUAP)*	2007
Ma. De Lourdes Ruiz Peralta	*Master of Science (Materials Science, IFUAP)*	2008

Erick Gómez Hernández	*Master of Science (in NEMS, UPAEP, Puebla, México)*	2008
Natalia Morales Flores	*Master of Science (Materials Science, IFUAP)*	2010
Rodrigo Saavedra Rosiles	*Master of Science (Materials Science, IFUAP)*	2010
Tlatoani Flores Arroyo	*Master of Science (Materials Science, IFUAP)*	2010
Celia Lizeth Gómez Muñoz	*Master of Science (Materials Science, IFUAP)*	2011
Abraham Palomec Garfias	*Master of Science (Materials Science, IFUAP)*	2014
Francisco Enrique Cancino Gordillo	*Master of Science (Materials Science, IFUAP)*	2018
Selma Kuri Hernandez	*Master of Science (Materials Science, IFUAP)*	2022
Total Master thesis	***19***	
Manuel Herrera Zaldícar	*Ph.D. in Science (Materials Science, IFUAP)* **With honorific mention *"Premio IIM-UNAM Certamen Nacional 2001".***	2001
José Francisco Sánchez Ramírez	*Ph.D. in Chemistry (Chemical Science, UNAM)* **Honorific mention and award for best thesis by the *Mexican Society of Surface and Vacuum Science*, 2005.**	2004
Jesus Garcia Serrano	*Ph.D. in Science (Materials Science, IFUAP)* **Honorific mention by BUAP**	2006
Mou Pal	*Ph.D. (Applied Science, CICAAP, UAEM, Cuernavaca, Mexico)*	2008
Mirna Lopez Fuentes	*Ph.D. in Science (Materials Science, IFUAP)*	2008
Alejandro Escobedo Morales	*Ph.D. in Science (Materials Science, IFUAP)* **Award of the best thesis by the *Mexican Society of Surface and Vacuum Science*, 2009.**	2008
Moisés Ocampo Fernández	*Ph.D. (Materials Science, Universidad autónoma de hidalgo, Pachuca, Hidalgo, México)*	2010
Ma. De Lourdes Ruiz Peralta	*Ph.D. in Science (Materials Science, IFUAP)*	2012
Raul Sanchez Zeferino	*Ph.D. in Science (Materials Science, IFUAP)*	2012
Natalia Morales Flores	*Ph.D. (Semiconductor devices, BUAP)*	2014
Sergio Isaac Uribe Madrid	*Ph.D. in Science (Materials Science, IFUAP)*	2015

Dulce Natalia López Castillo	*Ph.D. in Science (Materials Science, IFUAP)* **Honorific mention by BUAP**	2016
José Luis Montaño Priede	*Ph.D. in Science (Materials Science, IFUAP)*	2017
Jesus Alberto Ramos Ramón	*Ph.D. in Science (Materials Science, IFUAP)*	2018
Francisco Enrique Cancino Gordillo	*Ph.D. in Science (Materials Science, IFUAP)*	2023
Total Doctoral thesis	***15***	
Dr. Carol Perez Casas	*Post-doctoral Fellow (Project #46269, SEP-CONACyT)*	2006
Dr. Juan Andres Reyes Nava	*Post-doctoral Fellow (CONACyT)*	2009
Dr. Ovidio Yordanis Peña Rodríguez	*Post-doctoral Fellow (Project #46269, SEP-CONACyT)*	2008
Dr. Armando Perez Centeno	*Post-doctoral Fellow (Project #46269, SEP-CONACyT)*	2008
Dr. Mohan Kumar Naidu Pulleparthi	*Post-doctoral Fellow (Project # CB-2010/151767 CONACyT)*	2013
Dr. Alberto Sandoval	*Post-doctoral Fellow (Project # CB-2010/151767 CONACyT)*	2014
Dr. Manuel Jesus Rodriguez Perez	*Post-doctoral Fellow*	2016
Dr. Sudip Mondal	*Post-doctoral Fellow*	2017
Dr. Jose Luis Ortiz Quiñones	*Post-doctoral Fellow*	2018
Dr. Jose Luis Ortiz Quiñones	*Post-doctoral Fellow*	2021
Dra. Alba Arena Hernández	*Post-doctoral Fellow*	In progress
Total Postdoctoral supervision	***11***	

PUBLICATIONS in Journal (with 2022 Impact Factors):

1. Structural characterization of thin films of cadmium telluride. – S. Saha, **U. Pal**, B.K. Samantaray, A.K. Chaudhuri, and H.D. Banerjee; *Thin Solid Films* **164** (1988) 85-89. (Elsevier, ISSN: 0040-6090, IF= **2.358**).

2. X-ray line broadening and electron microscopic studies on evaporated ZnTe films. – **U. Pal**, S. Saha, B.K. Samantaray, H.D. Banerjee, A.K. Chaudhuri and V.V. Rao; *Phys. Stat. Sol. (a)* **111** (1989) 515-522. (Wiley, ISSN: 1862-6300, IF= **1.981**).

3. Some optical properties of evaporated ZnTe films. – **U. Pal**, S. Saha, A.K. Chaudhuri, V.V. Rao, and H.D. Banerjee; *J. Phys. D: Appl. Phys.* **22** (1989) 965-970 (IOP, ISSN: 0022-3727, IF= **3.409**). Also published in *Engineering Optics* vol. **22** (1989) 413-418.

4. Optical Properties of CdTe thin films. – S. Saha, **U. Pal**, A. K. Chaudhuri, V.V. Rao, and H.D. Banerjee; *Phys. Stat. Sol. (a)* **114** (1989) 721-729. (Wiley, ISSN: 1862-6300, IF= **1.981**).

5. On the mechanism of long-term relaxation in polycrystalline cadmium telluride and zinc telluride films. – **U. Pal**, S. Saha, S.K. Dutta and A.K. Chaudhuri*; Semicond. Sci. Technol*. **5** (1990) 429-434. (IOP, ISSN: 0268-1242, IF=**2.048**).

6. X-ray and electron microscopic determination of Debye characteristic temperature, stacking fault energy and other microstructural parameters in ZnTe films. – **U. Pal**, S. Saha, B.K. Samantaray, H.D. Banerjee and A.K. Chaudhuri; *Zeitschrift fur Kristallographie* **193** (1990) 33-45. (Springer, ISSN: 00442968, IF=**1.383**).

7. X-ray, electron microscopy and photovoltaic studies on thin films of cadmium telluride deposited normally at different substrate temperatures. – S. Saha, **U.Pal**, B.K. Samantaray, and A.K. Chaudhuri; *J. Mater. Sci*. **25** (1990) 4987-4991. (Springer, ISSN: 0022-2461, IF= **4.682**).

8. Effect of preferred orientation on photovoltage of CdTe thin films. - S. Saha, **U. Pal**, B.K. Samantaray, and A.K. Chaudhuri; *Solid State Commun*. **74** (1990) 839-841. (Elsevier, ISSN: 0038-1098, IF=**1.934**).

9. Contribution of junction and surface space charge on the generation of photovoltage in CdTe thin films. - S. Saha, **U. Pal**, and A.K. Chaudhuri; *Solid State Commun*. **75** (1990) 175-177. (Elsevier, ISSN: 0038-1098, IF=**1.934**).

10. Upgradation and studies on semiconducting properties of pyrite (FeS_2) for device applications. – H.D. Banerjee, N. Godgaunkar and **U. Pal**; *Mater. Lett.* **10** (1990) 99-104. (Elsevier, ISSN: 0167-577X, IF=**3.574**).

11. The anomalous photovoltaic effect in polycrystalline zinc telluride films. – **U. Pal,** S. Saha, A.K. Chaudhuri and H.D. Banerjee; *J. Appl. Phys.* **69** (1991) 6547-6555. (AIP, ISSN: 0021-8979, IF= **2.877**).

12. New conducting polymer 3^*; doping, stability, electrical and optical properties of poly (P-phenyl acetylenic phosphine). – Md. S. Rahaman, **U. Pal**, A.K. Chaudhuri and S. Maiti; *Colloid & Polymer Sci.* **269** (1991) 576-582. (Springer, ISSN: 0303-402X, IF= **2.434**).

13. Structural characterization of cadmium selenide thin films by x-ray diffraction and electron microscopy.- **U. Pal**, D. Samanta, S. Ghorai, B.K. Samantaray and A.K. Chaudhuri; *J. Phys. D: Appl. Phys.* **25** (1992) 1488-1494. (IOP, ISSN: 0022-3727, IF= **2.877**).

14. Dark- and photoconductivity in doped and undoped zinc telluride films. – **U. Pal**; *Semicond. Sci. Technol*. **8** (1993) 1331-1336. (IOP, ISSN: 0268-1242, IF=**2.048**).

15. Optical constants of vacuum evaporated polycrystalline cadmium selenide thin films. – **U. Pal**, D. Samanta, S. Ghorai and A.K. Chaudhuri; *J. Appl. Phys.* **74** (1993) 6368-6374. (AIP, ISSN: 0021-8979, IF= **2.877**).

16. Low cost solar selective absorbers from Indian galena ore. – S. Chatterjee and **U. Pal**; *Optical Engineering* **32** (1993) 2923-2929. (SPIE, ISSN: 0091-3286, IF= **1.084**).

17. Anomalous photovoltage in $Cd_{0.8}Zn_{0.2}Te$ thin films. – B. Samanta, A.K. Chaudhuri, S.L. Sharma and **U. Pal**; *J. Appl. Phys.* **75** (1994) 2733-2735. (AIP, ISSN: 0021-8979, IF= **2.877**).

18. Electron diffraction study of the texture of cadmium selenide thin films. – D. Samanta, S. Ghorai, B.K. Samanataray, A.K. Chaudhuri and **U. Pal***; Ind. J. Pure & Appl. Phys.* **32** (1994) 909-911. (CSIR-NISCAIR, ISSN: 0019-5596, IF= **0.923**).

19. Study of point defects in CdTe and CdTe: V by cathodoluminescence. – **U. Pal**, J. Piqueras, P. Fernandez, M.D. Serrano and E. Dieguez; *J. Appl. Phys.* **76** (1994) 3720-3723. (AIP, ISSN: 0021-8979, IF= **2.877**).

20. Cathodoluminescence spectroscopy for evaluation of defect passivation in GaSb. – **U. Pal**, J. Piqueras, P.S. Dutta, H.L. Bhat, G.C. Dubey. Vikram Kumar and E. Dieguez; *Mater. Res. Bull.* Vol. **406** (1995) 537-542. (Elsevier, ISSN: 0025-5408, **IF= 5.6**).

21. Microstructural features of $Cd_{0.8}Zn_{0.2}Te$ thin films studied by x-ray diffraction and electron microscopy. –B. Samanta, **U. Pal**, B.K. Samantaray, T.B. Ghosh, S.L. Sharma and A.K. Chaudhuri, *Bull. Mater. Sci.* **18** (1995) 81-91. (Springer, ISSN: 0250-4707, IF= **1.878**).

22. Deep level cathodoluminescence in deformed CdTe crystals. – C. Diaz Guerra, **U. Pal**, P. Fernandez and J. Piqueras; *Phys. Stat. Sol. (a)* **147** (1995) 75-80. (Wiley, ISSN: 1862-6300, IF= **1.981**).

23. Effect of thermal annealing on Te precipitates in CdTe wafres studied by Raman scattering and cathodoluminescence. – N.V. Sochinskii, F. Agullo-Rueda, M.D. Serrano, E. Dieguez, **U. Pal**, J. Piqueras and P. Fernandez; *J. Appl. Phys*. **77** (1995) 2806-2808. (AIP, ISSN: 0021-8979, IF= **2.877**).

24. Study of defects in CdTe: Cl by cathodoluminescence microscopy. – **U. Pal**, P. Fernandez and J. Piqueras; *Mater. Lett.* **23** (1995) 227-230. (Elsevier, ISSN: 0167-577X, IF= **3.574**).

25. Cathodoluminescence characterization of Ge-doped CdTe crystals. – **U. Pal**, P. Fernandez, J. Piqueras, N.V. Sochinskii and E. Dieguez, *J. Appl. Phys.* **78** (1995) 1992-1995. (AIP, ISSN: 0021-8979, IF= **2.877**).

26. Cathodoluminescence microscopic studies of α-HgI_2 platelets and crystals. – **U. Pal**, J. Piqueras, P. Fernandez, M.D. Serrano, N.V. Sochinskii and E. Dieguez, *Appl. Phys. A* **61** (1995) 645-649. (Springer, ISSN: 0947-8396, IF= **2.877**).

27. Elimination of Te precipitates from CdTe wafers. – N.V. Sochinskii, M.D. Serrano, E. Dieguez, F. Agullo-Rueda, **U. Pal**, J. Piqueras and P. Fernandez; *Semicond. Sci. Technol.* **10** (1995) 870-875. (IOP, ISSN: 0268-1242, IF=**2.048**).

28. Passivation of surface and bulk defects in p-GaSb by hydrogenated amorphous silicon treatment. – P.S. Dutta, A.K. Sreedhar, H.L. Bhat, G.C. Dubey, Vikram Kumar, E. Dieguez**, U. Pal**, and J. Piqueras; *J. Appl. Phys.* **79** (1996) 3246-3252. (AIP, ISSN: 0021-8979, IF= **2.877**).

29. Electrical characterization of stable air-oxidized CdSe films prepared by thermal evaporation. – D. Samanta, B. Samanta, S. Ghorai, A.K. Chaudhuri and **U. Pal**; *Semicond. Sci. Technol.* **11** (1996) 548-553. (IOP, ISSN: 0268-1242, IF=**2.048.**).

30. Near band gap photoreflectance studies in CdTe, CdTe: V and CdTe: Ge crystals. – **U. Pal**, J.L. Herrera Perez, J. Piqueras and E. Dieguez; *Mater. Sci. Eng. B* **42** (1996) 297-301. (Elsevier, ISSN: 0921-5107, IF= **3.407**).

31. Optical characterization of vacuum evaporated cadmium sulfide films. – **U. Pal**, R. Silva Gonzalez, G. Martinez Motes, J.M. Gracia Jimenez, M.A. Vidal and Sh. Torres; *Thin Solid Films* **305** (1997) 345-350. (Elsevier, ISSN: 0040-6090, IF= **2.358**).

32. Electron beam induced structural modification of the oxidized silicon micro-clusters in ZnO matrix. – **U. Pal**, N. Koshizaki, S. Terauchi and T. Sasaki; *Microscopy, Microanalysis and Microstructures* **8** (1997) 403-411. (EDP Sci., ISSN: 1154-2799, IF= **1.73**).

33. Infrared absorption and evidence of Si_3 nanocluster formation in Si/ZnO composites. **U. Pal**, J. Garcia-Serrano; *Solid State Commun.* **111** (1999) 427-430. (Elsevier, ISSN: 0038-1098, IF=**1.934**).

34. Effect of thermal treatment on the optical properties of colloidal Cu nanoparticles prepared by ion-implantation in quartz glass. – A. Bautista Hernandez, **U. Pal**, L. Rodriguez Fernandez and J.C Cheang Wong; *Superficies y Vacio* **9** (1999) 296-299. (ISSN: 1665-3521, IF=**0.177**).

35. Structure of Si nano-clusters in ZnO matrix. – J. Garcia Serrano, **U. Pal***; Superficies y Vacio* **9** (1999) 184-187. (ISSN: 1665-3521, IF=**0.177**)

36. Nanostructure and photoluminescence property of Si/MgO and Si/ZnO co-sputtered films. - N. Koshizaki, H. Umehara, T. Sasaki and **U. Pal**; *Nanostruct. Mater.* **12** (1999) 975-978 (Pergamon-Elsevier, ISSN: 0965-9773, IF= **4.921**).

37. Effect of thermal annealing on the optical properties of high-energy Cu implanted silica glass. – A. Bautista Hernandez, **U. Pal**, L. Rodriguez Fernandez and J.C. Cheang Wong; *J. Non-Cryst. Solids* **275** (2000) 65-71. (Elsevier, ISSN: 0022-3093, IF= 4.**458**).

38. Synthesis of CdS nanoparticles through colloidal rout. – **U. Pal**, G. Loaiza Gonzalez, A. Bautista Hernandez, O. Vazquez Cuchillo; *Superficies y Vacio* **11** (2000) 40-43. (ISSN: 1665-3521, IF=**0.177**).

39. Preparation and characterization of functional and non-functional nanocomposites. **– U. Pal**, J. Garcia Serrano, A. Bautista Hernandez, O. Vazquez Cuchillo, E. Aguila Almanza, N. Koshizaki, and T. Sasaki; *Rev. Mex. Fis. (Mexican Journal of Physics)* **46** (S2) (2000) 79-82. (Acad. Mex. Fís, ISSN: 0035-001X, IF= **1.702**).

40. Synthesis of GaAs nanoparticles embedded in SiO_2 matrix by radio frequency co-sputtering. – **U. Pal**, A. Bautista Hernandez, N. Koshizaki, T. Sasaki and S. Terauchi; *Scripta Materialia* **44** (2001) 1841-1846. (Elsevier, ISSN: 1359-6462, IF= **6.302**).

41. Preparation of Au/ZnO nanocomposites by radio frequency co-sputtering. – **U. Pal**, E. Aguila Almanza, N. Koshizaki, T. Sasaki and S. Terauchi; *Solar Energy Materials and Solar Cells* **70** (2001) 363-368. (Elsevier, ISSN: 0927-0248, IF= **7.305**).

42. Synthesis of Cu/ZnO nanocomposites by radio frequency co-sputtering technique. – O. Vazquez Cuchillo, **U. Pal**, C. Vazquez Lopez; *Solar Energy Materials and Solar Cells* **70** (2001) 369-377. (Elsevier, ISSN: 0927-0248, IF= **7.305**).

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and Acetaldehyde. - A. U. Pawar, **Umapada Pal**, Jin You Zheng, Chang Woo Kim, Young Soo Kang, *Appl. Catal. B 303 (2022) 120921* (Elsevier, ISSN: 0926-3373, **IF= 24.319**).

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297. Removal of Cr(III) Ions from Water Using Magnetically Separable Graphene-Oxide-Decorated Nickel Ferrite Nanoparticles. - Jose Luis Ortiz-Quiñonez, Francisco Enrique Cancino Gordillo, and **Umapada Pal**, ACS Applied Nano Materials (2023) 18491-18507 (ACS, ISSN: 2574-0970, **IF= 6.14**).

298. Biomedical and Bioengineering Prospects of Calcium Phosphates. – Sudip Mondal and **Umapada Pal**, *BME Horizon Vol. 1(1):50* (2023) (Global Science, UK, ISSN: 2972-449X). https://doi.org/10.37155/2972-449X-0101-5

Summery of Publications in Journals

Journal	Number of publications	Impact Factor-2022	Total Impact Factor
Progress in Materials Science	**1**	**48.165**	**48.165**
Advanced Materials	**1**	**32.086**	**32.086**
Applied Catalysis B: Environmental	**6**	**24.319**	**145.914**
Nano Energy	**1**	**19.069**	**19.069**
Chemical Engineering Journal	**1**	**16.744**	**16.744**
Small	**1**	**15.153**	**15.153**
Journal of Materials Chemistry A	**1**	**14.511**	**14.511**
Energy Conversion and Management	**1**	**11.533**	**11.533**

Chemistry of Materials	**1**	**10.508**	**10.508**
ACS Applied Materials and Interfaces	**2**	**10.383**	**20.766**
Advanced Optical Materials	**1**	**10.050**	**10.05**
Journal of Power Sources	**1**	**9.794**	**9.794**
Advances in Nano Research	**7**	**9.47**	**66.29**
Wiley Interdisciplinary Reviews: Nanomedicine and Nanobiotechnology	**1**	**9.423**	**9.423**
Materials & Design	**1**	**9.417**	**9.417**
ACS Sustainable Chemistry & Engineering	**1**	**9.224**	**9.224**
Physical Review Letters	**1**	**9.185**	**9.185**
Chemosphere	**1**	**8.943**	**8.943**
Waste Management	**1**	**8.696**	**8.696**
Nanoscale	**4**	**8.307**	**33.228**
Journal of Materials Chemistry C	**2**	**8.067**	**16.134**
Journal of Catalysis	**1**	**8.047**	**8.047**
Fuel	**1**	**8.035**	**8.035**
Analytical Chemistry	**1**	**8.008**	**8.008**
Journal of Materials Chemistry B	**1**	**7.571**	**7.571**
Applied Surface Science	**6**	**7.392**	**44.352**
Electrochimica Acta	**1**	**7.336**	**7.336**
Solar Energy Materials and Solar Cells	**8**	**7.305**	**58.44**
International Journal of Hydrogen Energy	**2**	**7.139**	**14.278**
ACS Applied Energy Materials	**2**	**6.959**	**13.918**
Journal of Alloys and Compounds	**3**	**6.371**	**19.113**
ACS Applied Nano Materials	**2**	**6.140**	**6.14**
Applied Catalysis A	**1**	**5.723**	**5.723**
Catalysis Today	**2**	**5.70**	**11.4**
Scripta Materialia	**1**	**6.302**	**6.302**
Materials Research Bulletin	**2**	**5.60**	**11.2**
Ceramics International	**2**	**5.532**	**11.064**
Colloids and Surfaces A: Physicochemical and Engineering Aspects	**1**	**5.518**	**5.518**
Inorganic Chemistry	**1**	**5.436**	**5.436**
Nanoscale Research Letters	**5**	**5.418**	**27.09**
Journal of Drug Delivery Science and Technology	**1**	**5.062**	**5.062**
Chemistry an European Journal	**1**	**5.02**	**5.02**
Materials Chemistry and Physics	**6**	**4.778**	**28.668**
Computer Physics Communications	**2**	**4.717**	**9.434**
Journal of Materials Science	**2**	**4.682**	**9.364**
International Journal of Energy Research	**1**	**4.672**	**4.672**
Materials Characterization	**2**	**4.537**	**9.074**
Materials Science and Semiconductor Processing	**1**	**4.42**	**4.42**
Scientific Reports	**1**	**4.38**	**4.38**
Industrial & Engineering Chemistry Research	**1**	**4.326**	**4.326**
Journal of Physical Chemistry C	**20**	**4.177**	**83.54**
Journal of Luminescence	**3**	**4.171**	**12.513**
ACS Omega	**6**	**4.132**	**24.792**
Microscopy and Microanalysis	**1**	**4.099**	**4.099**
Soft Matter	**1**	**4.046**	**4.046**
RSC Advances	**7**	**4.036**	**28.252**

Crystal Growth and Design	**3**	**4.01**	**12.03**
Applied Physics Letters	**2**	**3.971**	**7.942**
Energy Science & Engineering	**1**	**3.95**	**3.95**
Physical Chemistry Chemical Physics	**1**	**3.945**	**3.945**
Physical Review B	**2**	**3.908**	**7.816**
Journal of Nanomaterials	**1**	**3.791**	**3.791**
Materials Letters	**2**	**3.574**	**7.148**
Optical Materials	**4**	**3.754**	**15.016**
Catalysis Communications	**1**	**3.51**	**3.51**
Journal of Physical Chemistry B	**4**	**3.466**	**13.864**
Materials Science and Engineering B	**2**	**3.407**	**6.814**
Superlattice and Microstructures	**1**	**3.22**	**3.22**
Journal of Physics D: Appl. Phys.	**2**	**3.207**	**6.414**
Journal of Polymer Science B: Polymer Physics	**2**	**3.151**	**6.302**
Journal of Magnetism and Magnetic Materials	**5**	**3.097**	**15.485**
Journal of Physical Chemistry A	**1**	**2.944**	**2.944**
Catalysis Letters	**2**	**2.936**	**5.872**
Journal of Materials Research	**1**	**2.909**	**2.909**
Microscopy Research and Techniques	**1**	**2.893**	**2.893**
Journal of Applied Physics	**12**	**2.877**	**34.524**
Current Applied Physics	**4**	**2.856**	**11.424**
Journal of Solid-State Electrochemistry	**1**	**2.747**	**2.747**
Topics in catalysis	**2**	**2.47**	**4.94**
J. Non-Cryst. Solids	**1**	**4.458**	**4.458**
Applied Physics A	**6**	**2.983**	**17.898**
Journal of Nanoparticle Research	**4**	**2.533**	**10.132**
Colloid and Polymer Science	**1**	**2.434**	**2.434**
Thin Solid Films	**4**	**2.358**	**9.432**
Optics Communications	**1**	**2.335**	**2.335**
Chemistry Select	**1**	**2.307**	**2.307**
Physica Status Solidi (a)	**3**	**2.170**	**6.51**
Materials Science Research India	**1**	**1.878**	**1.878**
Physica Status Solidi (b)	**1**	**1.782**	**1.782**
Journal of Optical Society of America B	**3**	**2.058**	**6.174**
Semiconductor Science and Technology	**4**	**2.048**	**8.192**
Modern Phys. Lett. B	**3**	**1.948**	**5.844**
Solid State Communications	**3**	**1.934**	**5.802**
SN Applied Science	**1**	**2.0**	**2.88**
Euro-Mediterranean Journal for Environmental Integration	**2**	**2.0**	**2.2**
Bulletin of Materials Science	**1**	**1.878**	**1.878**
Journal of Nano Research	**5**	**1.780**	**8.9**
International Journal of spectroscopy	**1**	**1.750**	**1.75**
Revista Mexicana de Física	**8**	**1.702**	**13.616**
Zeitschrift fur Kristallographie	**1**	**1.383**	**1.383**
Science of Advanced Materials	**2**	**1.474**	**2.948**
Journal of Nanoscience and Nanotechnology	**14**	**1.354**	**18.956**
Optical Engineering	**1**	**1.352**	**1.352**
Journal of New Materials for Electrochemical Systems	**2**	**1.316**	**2.632**
Radiation Effects and Defects in Solids	**1**	**1.024**	**1.024**

Nanostructured Materials	**1**	**0.969**	**0.969**
Acta Cristalografía E	**1**	**0.91**	**0.91**
Physics of Solid State	**1**	**0.848**	**0.848**
Indian Journal of Pure & Appl. Phys.	**1**	**0.846**	**0.846**
Microscopy, Microanalysis and Microstructure	**1**	**0.824**	**0.824**
Matéria	**1**	**0.483**	**0.483**
American Journal of Engineering and Applied Science	**1**	**0.30**	**0.3**
Advanced Science Letters	**1**	**0.283**	**0.283**
Acta Microscopica	**4**	**0.247**	**0.988**
Physica Status Solidi (c)	**3**	**0.21**	**0.63**
Superficies y Vacio	**7**	**0.177**	**1.239**
Materiales Avanzados (IIM-UNAM)	**1**	-----	-----
Nano Trends	**1**	-----	-----
Journal of Phase Change Materials	**5**	-----	-----
BME Horizon	**1**	-----	-----
Total Journal articles	**298**		**Total IF = 1383.983**
Extended Abstracts	**14**		
Book Chapters	**13**		
Books	**1**		
TOTAL	**326**		

Extended Abstracts (Conference Proceedings)**: 14**

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4. IR analysis of the Cu/ZnO composite films. - O. Vazquez Cuchillo, **U. Pal**, C. Vazquez Lopez; Proc. of the "*IV International Meeting of Composite Materials*", November 2000, Morelia, México, P 190-195.

5. Vibronic structure in photoluminescence in Cr^{+3}:Al_2O_3 ruby laser.- P. Mohanty, S. Rana, S. Ram, **U. Pal**, J.M. Gracia Jimenez, H. Navarro Contreras; Proc. of "*Photonics 2000*", December 2000, Calcutta, India, IEEE Publication, PP 798-800.

6. Preparation of Au/Al_2O_3 nanocomposite thin films by radio frequency co-sputtering. - J. Garcia Serrano, **U. Pal**, O. Vazquez Cuchillo; Proc. *of "Applied Statistical Physics, Molecular Engineering Conference (ASTATPHYS-2001)",* Cancun, July 23-27, 2001, Mexico (in CD).

7. Structure determination of bimetallic Au/Cu nanoparticles. - H.B. Liu, **U. Pal**, J.F. Sanchez Ramirez, A. Medina, J.A. Ascencio, Proc. of "the International tenth Beijing Conference and Exhibition on Instrumental Analysis"-Electron Microscopy, Oct. 13-16, 2003, Beijing, China, Peking University Press, Beijing. PP A19-A20.

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10. Synthesis of ZnO_2 Nanocrystals Produced by Hydrothermal Process. -R. Esparza, A. Aguilar, A. Escobedo-Morales, C. Patiño-Carachure, **U. Pal**, G. Rosas, and R. Pérez; *Mater. Res. Soc. Symp. Proc.* Vol. **1242** (2010), MRS, (ISSN: PROC-1242).

11. Correlation of Silver Size Nanoparticles between TEM and QELS. - A. Ruíz-Baltazar, A. Escobedo, **U. Pal**, R. Pérez, and G. Rosas; *Mater. Res. Soc. Symp. Proc.* Vol. **1275** (2010), P-23

12. Ag, Cu, and Au incorporated SiO_2 as diesel soot oxidation catalyst: Effect of metallic Ag in Ag/SiO_2 for diesel soot oxidation. - G. Corro, **U. Pal**, E. Ayala, E. Vidal, E. Guilleminto; 9th International Congress on Catalysis and Automotive Pollution Control (COPoC 9), Brussels, August 2012, Belgium. pp 413-421.

13. Actividad antimicrobiana de nanomateriales contenido principios activos de manzanilla (*Matricaria chamomilla L.*). - Flores L., Mercado F., Alvarado A., Sánchez E., Soriano J., Tejeda A., Vera A., Ortega R., Domínguez M., Espinoza C., Cachau R., **Pal U.**, Hernández L., Juárez Z., Miranda M., Palacios T. Biociencias 2(4) (2014) 56-57.

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2. Study of deep defect levels in polycrystalline cadmium sulfide films. – **U. Pal**, R. Silva Gonzalez, F. Donado, M.L. Hernandez Guerra, J.M. Gracia Jimenez*;* ***Current Problems in Condensed Matter: Theory and Experiment*** (Ed. J.L. Moran Lopez), Plenum Publishing Corporation (1997) 255-261.

3. Optical absorption of Cu implanted silica. – A. Bautista Hernandez, L. Meza Monts, **U. Pal**, and L. Rodriguez Fernandez; published in ***Surface Science and its Applications***, World Scientific, (2000) 326-328.

4. Low temperature hydrothermal synthesis of ZnO nanorods.- **U. Pal**, P. Santiago, and J. Garcia Serrano.- in **Semiconductor Nanocrystals,** Vol. 1, Eds. B. Pödör, Zs. J. Horváth, P. Basa, Budapest, Hungary, 2005. ISBN: 9637371 19 2, P27-30.

5. Crystallization and opticalproperties of MoS_2 particles synthesized by solvothermal technique.- **U. Pal**, P. Santiago, J. Garcia Serrano, and J.M. Garcia-Jimenez.- in **Semiconductor Nanocrystals,** Vol. 1, Eds. B. Pödör, Zs. J. Horváth, P. Basa, Budapest, Hungary, 2005. ISBN: 9637371 19 2, P111-114.

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7. Síntesis y polimerización del ionómero ácido o-acriloilaminofenilarsénico. - J. Garcia Serrano, Ana M. Herrera y **U. Pal**. ***Memoria del VI Taller Nacional de Fisica y Ciencia de Materiales para Estudiantes de Posgrado*** (Eds: F. Perez Rodríguez, A. Rosado Sánchez, A.B. Cabrera Fuentes, N.R. Silva Gonzalez); Benemérita Universidad Autónoma de Puebla, (ISBN: 968 863 8501), (2006) PP 95-100.

8. La teoria de Mie en el estudio de nanoparticulas. - M. López Fuentes, J.F. Rivas Silva, **U. Pal**, J.F. Sánchez Ramirez***; Memoria del VI Taller Nacional de Fisica y Ciencia de Materiales para Estudiantes de Posgrado*** (Eds: F. Perez Rodríguez, A. Rosado Sánchez, A.B. Cabrera Fuentes, N.R. Silva Gonzalez); Benemerita Universidad Autonoma de Puebla, (ISBN: 968 863 8501), (2006) PP 261-265.

9. Ion Implantation for the Fabrication of Plasmonic Nanocomposites: A brief Review. - **Umapada Pal**, and Ovidio Peña Rodriguez; **Invited book chapter** in "***Ion Implantation***", INTECH Publisher, Croetia, Ed. **Mark S. Goorsky (**Department of Materials, Science and Engineering, University of California, Los Angeles, USA), (ISBN: 978-953-308-3-19) Chapter 14 (2012) pp 327-360.

10. Fabrication of porous composite nanostructures for drug-delivery applications - Sergio I. Uribe Madrid, **Umapada Pal**, C.L. Gómez Muñoz, ***Processing and Fabrication of Advanced Materials-XXI*** (ISBN: 978-93-82332-15-2), I.K. International Publishing House Pvt. Ltd. New Delhi, December 2012. Eds. P.S. Rubi, N. Bhatnagar, T.S. Srivastan, Guahati, India. Vol. 1, pp 256-261.

11. Exploiting the tunable optical properties of metallic nanoshells. - Ovidio Peña-Rodríguz, and **Umapada Pal***;* **Invited book chapter** in ***"VU-VIS and Photoluminescence Spectroscopy for Nanomaterials Characterization***", Springer, S.S.R. Kumar Challa (Ed), 2013, Capter 3, pp 99-149 (ISBN 978-3-642-27594-4).

12. Effects of synthesis conditions on the control of morphology and size of silica nanoparticles. - D. Cornejo-Moroy, **U. Pal**, M. P. González Araoz, and J. F. Sánchez-Ramírez. ***Temas Actuales de la Física y la Ciencia de Materiales.*** (Eds: F. Perez Rodríguez, M. P Sampedro, E. de L. Juárez Ruiz); Benemerita Universidad Autonoma de Puebla, (ISBN: 978-607-487-534-8), (2013) PP 73-83.

13. Síntesis de nuevos monómeros y polímeros con grupos ácido fosfónico para aplicaciones en celda de combustible. - M. Ocampo-Fernández, J. García Serrano, A. M. Herrera-González, A. R. Hernández-Sosa, and **U. Pal**. ***Temas Actuales de la Física y la Ciencia de Materiales.*** (Eds: F. Perez Rodríguez, M. P Sampedro, E. de L. Juárez Ruiz); Benemerita Universidad Autonoma de Puebla, (ISBN: 978-607-487-534-8), (2013) PP 92-99.

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h **(Hirsch)-Index:** **61**

Patents Registered: 5

1. ***Procedure for the production of biodiesel utilizing zinc oxide-silica photocatalyst,*** *patent application # MX2011013388 (2011) Inventors: Griselda Corro and Umapada Pal.* Patent # MX/a/2011/013388, June 25, 2019.
2. ***Production of biogas through photocatalytic delignification of biomass and the processes therein,*** *patent application # MX/a/2013/013482. Inventors: Griselda Corro and Umapada Pal.* Patent # MX/a/2013/013482, June 25, 2019.
3. ***Process for producing a highly active photocatalyst from the nickel-cadmium electric storage battery scrap.*** *Patent application # MX/a/2014/004300. Inventors: Griselda Corro and Umapada Pal.* Patent # MX/a/2014/004300, June 13, 2020.
4. ***Fabrication and regeneration process of an adsorbent containing mixed oxide nanoparticles of Ti and Si efficient for adsorbing cationic dye molecules,*** *patent application # MX/a/2015/011850. Inventors: Umapada Pal and Griselda Corro.* Patent # *MX/a/2015/011850. March 24, 2021.*
5. ***Process of producing a photocatalyst of Cromium-silica for the production of biodiesel utilizing nonedible oils and solar radiation*****,** *patent application #*

MX/a/2016/016249. Inventors: Griselda Corro and Umapada Pal. Patent # MX/a/2016/016249, 6th July 2021.

Patents Filed: 1

1. A process for producing biodiesel utilizing non-edible oil and mineral scrap onyx (Proceso para producir biodiesel utilizando aceites no comestibles y desechos mineros de onyx) Patenet Filed # *MX/a/2022/015964, Inventors: Griselda Corro y* ***Umapada Pal****.*

DEVELOPD RESEARCH PROJECTS:

As Project leader: **26**

- **Fabricación de Heteroestructuras Semiconductoras de baja dimensionalidad para aplicación en Dispositivos Optoelectrónicos** (CONACyT, Mexico, No. 1351-PA), March 1996-February 1998.
- **Crecimiento y caracterización de Nuevos Nanocompositos Funcionales y No-funcionales para aplicaciones Optoelectrónicos y Fabricación de Detectores de Gases Tóxicos** (CONACyT, Mexico, No. 28380-E), January 1999-December 2001.
- **Preparation and characterization of Ge/ZnO nanocomposites** (VIEP-SEP-CONACyT, Mexico, No. II13I01), 2001-2002.
- **Synthesis and characterization of bimetallic nanoparticles of Pt- Ru for applications in electro-catalysis and fuel cells (**BUAP-CONACyT-SEP: II-194-04/EXC/I), July 2004-February 2005.
- **Syntesis, optical and elecetrical characterization of CdTe/ZnO and Ge/ZnO nanocomposites de (**BUAP-CONACyT: II-13I02**), May 2003-January 2004.**
- **Síntesis y caracterizacion de nanoparticulas bimetalicas de Pt-Ru para aplicaciones en electrocatalisis y Celdas de Combustible** (VIEP-BUAP-CONACyT, Mexico. Grant No. 11/I/EXC/05), June 2005-March 2006.
- **Novel metal oxide nanostructures for optoelectronic and radiation dosimetry applications** (CONACyT-SEP, Mexico. Grant No. 46269-A), July 2005-June 2008.
- **Investigating the effects of doping and trap states on the optical, electronic and structural properties of oxide nanostructures** (UC-MEXUS-CONACyT, Grant No. CN-05-215), July 2005-December 2006.
- **3rd Topical Meeting on Nanostructured Materials and Nanotechnology (NANOTECH-2006)** (Complimentary finance for Cientific Activities; CONACyT, Mexico, Grant No. 86). January 2006-September 2006.
- **Synthesis of zinc oxide nanostructures of different morphologies through thermolysis (VIEP-BUAP, Grant No. 27/EXC/06-1),** July 2006-June 2007.
- **Studies of luminescent properties of doped zinc oxide (ZnO) and tin oxide (SnO_2) nanostructures (VIEP-BUAP/2007),** July 2007-June 2008.
- **Morphology controlled hydrothermal synthesis of Tin Oxide nanostructures (VIEP/EXC/93/2008-1)**, July 2008-December 2009.

- **Synthesis of monodispersed magnetite nanoparticles protected by porous silica for biomedical applications (VIEP-BUAP/EXC/2011), January 2011-December 20111.**
- **Evaluation of Composite magnetite@meso-silica nanoparticles for Biological Applications (VIEP-BUAP/EXC/2012)**, January 2012-December 2012.
- **Fabrication of composite structures based on magnetic nanoparticles for biological applications** (CONACyT, Mexico, No. CB-2010/151767), May 2012-April 2015.
- **Synthesis of Cu-Zn bimetallic nanoparticle-supported TiO_2 nanospheres for catalytic applications** (VIEP-BUAP, VIEP/EXC/2013), January-December 2013.
- **Synthesis of Cu-Zn and Ag-Au bimetallic nanoparticle decorated mesoporousTiO_2 nanospheres for photocatalytic applications** (VIEP-BUAP, VIEP/EXC/2014), January-December 2014.
- **Acquiring infrastructure for the development of research in advanced materials at IFUAP** (CONACyT, INFRA-2014/ 230530, May-December, 2014)
- **Sintesis y auto-ensamble de nanopartículas de oro con diferentes tamaños y morfologías para fabricación de sensores químicos y biólogicos** (CUV-DITCo/2014-3).
- **Self-assembled gold nanoparticles for the fabrication of chemical and biological sensors (Stage-1)** (CUV-DITCo/2015-38, April-December, 2015).
- **Low-dimensional hybrid hierarchical nanoporous materials for environmental applications** (INDIA-MEXICO Billataral Project, CONACyT-DST, # 00163646), Sept 2012-August 2015.
- **Synthesis of Cu-Zn and Ag-Au bimetallic nanoparticle decorated mesoporousTiO_2 nanospheres for photocatalytic applications** (VIEP-BUAP, VIEP/EXC/2015), March - December 2015.
- **Self-assembled gold nanoparticles for the fabrication of chemical and biological sensors (Stage-2)** (CUV-DITCo/2016-13, April-December, 2016).
- **Development of reduced Graphene oxide -Metal oxide Nanocomposites for Photocatalytic applications** (VIEP-BUAP, VIEP/EXC/2016), March-December 2016.
- **Development of reduced Graphene oxide -Metal oxide Nanocomposites for Photocatalytic applications (Phase-II)** (VIEP-BUAP, VIEP/EXC/2017), March-December 2017.
- **Design and fabrication of plasmon coupled superluminescent nanophosphors** (CONACyT # A1-S-26720), October 2019-September 2022.

As Participant: 28

1. Optical properties of nanoparticles produced through ion implantation en cuartz simples (UNAM, Mexico, Grant # INI104999), Nov.2000-October 2002.
2. Síntesis, optical and structural characterization of Au/Al_2O_3 nanocomposites (UAEH, Hidalgo, Mexico, Grant No. PAU 2000), July 2000-June 2001.
3. Development of postgraduate program: Maestres and Doctorate program in physics and materials science (CONACYT, Mexico, Grant No. 481110-000/456/0/PAD) 1996-1998.
4. Caracterization of Semiconductor, Superconductor and Metal composites through SEM, EDS y AES techniques (CONACYT, Mexico, Grant No. 1600P-E9507), 1997-1999.
5. Complementary Experimental and Computacional Infrastructures for Investigation and postgraduate programs of IFUAP (FOMES96), SEP, Mexico, 1996.

6. Development of Postgraduate and Investigation of IFUAP (FOMES 97-98), 1997-1998.
7. Development of Postgraduate and Investigation in Materials Science of IFUAP (transversal project 1998-99), 1998-1999.
8. Development of Research streams and postgraduate programs of Instituto de Física "Luis Rivera Terrazas" (FOMES 99-22-09), SEP, Mexico, 2000.
9. Infrastructure development and betterment of Physics program of IFUAP (FOMES 2000-22-13), SEP, Mexico, 2000-2001.
10. Síntesis y caracterización óptica y estructural de nanocompositos de Au/Al_2O_3 (No. PAU 2000), Universidad Autonoma del Estado de Hidalgo, Mexico; July 2000 - June 2001.
11. Investigation and optimization of the CdTe/CdS Interface in an unconventional device configuration (CONACyT, Mexico, Grant No. 38542-U), 2002-2004.
12. Development of CdTe thin films over metallic substrates by Close Space Sublimation and development of a CdTe/CdS solar Cell with inverse structure (PAPIIT- UNAM, Mexico, Grant # IN115102), 2003-2005.
13. Development of New Materials for PEM type Fuel Cells (CIAM- CONACyT, Mexico, Grant No. 42146), 2004-2006.
14. Caracterization of Nanostructure systems by Transmisión Electron Microscopy (TEM) and Electron Holography (UNAM, Mexico, PAPIIT-IX107204), January 2004-December 2004.
15. Synthesis and characterization of unidimensional systems using mesoporos Al_2O_3 templates (UNAM, Mexico, PAPIIT- IN108303-3), January 2004-December 2006.
16. Studies and analysis of Linear and Nonlinear optical properties of nanostructure Systems (CONACyT, Mexico, Grant No. 42823), July 2004–June 2007.
17. Tunneling Microscopy and Spectroscopy in ZnO nanorods (SEP-CONACyT, Mexico; Grant No. 47505), July 2004-June 2008.
18. Development of polycrystalline thin film solar cells based on CuIn (Ga) Se_2, and CdTe (SEP-CONACyT, Mexico; Grant No. 47587), July 2005-June 2008.
19. Fuel Cells with nanostructured Pt and Pt-alloys supported on carbon nanotubes (CONACYT-Puebla Govt., Mexico; Grant No. 13), January 2005-December 2007.
20. **Nanohilos Semiconductores con Brecha de Energia Ancha. Crecimiento, Estudio de su Estructura Electronica y propiedades Luminiscentes** (SEP-CONACyT, Mexico, Grant No. 102519), January 2009-December 2011.
21. Estudio de las propiedades Ópticas y electrónicas de defectos e impurezas en nanoestructuras de ZnO y SnO_2 por cátodoluminiscencia y espectroscopía túnel (UNAM, Mexico, PAPIIT-IN107208), January 2008-December 2010.
22. **Depositación de nanopartículas de TiO_2 y ZnO en zeolitas para aplicaciones cataliticas** (UNAM, Cuernavaca, Mexico, PAPIIT-IN101709), January 2009-December 2011.
23. **Crecimiento y Estudio de Nanoestructuras de ZnO Unidimensionales Aplicadas en la Fabricación de Diodos** (CONACyT CB-2011/168027) 2012-2015.
24. **Structural changes associated with environmental factors in Lead-Halide Perovskite and TiO_2 Dye Sensitized Solar Cells** (CONACyT-CB-256946), August 2016-July 2019.
25. Self-assembly of ro nanoparticles for the fabrication of chemical and biological sensors. Responsible, DITCo-BUAP Project (# DITCO2015-38), 2015 to 2019.
26. X-ray absorption fine structure study of hybrid perovskite solar cells with direct (n-i-p) and inverted (p-i-n) configurations. Frontier Project (#FORDECYTPRONACES/848260/2020), CONACyT, Mexico, 2020-2023.
27. Research on the application of catalytic processes and functional reactors with solar energy in industrial processes. VIEP-BUAP Project # 100260000-VIEP 2021.

28. Research on the application of catalytic processes and solar-powered functional reactors in industrial processes. Project VIEP-BUAP # 000211, 2022.

WORKS PRESENTED IN INTERNATIONAL CONFERENCE/CONGRESS: 225

1. Cathodoluminescence spectroscopy for evaluation of defect passivation in GaSb. - **U. Pal**, J. Piqueras, P.S. Dutta, H.L. Bhat, G.C. Dubey, Vikram Kumar, E. Dieguez; "*MRS Fall Meeting"*, Boston, Massachusetts, November 27-December 1, 1995, P 82.

2. Cathodoluminescence studies of α-HgI_2 platelets. - **U. Pal**, J. Piqueras, P. Fernández, M.D. Serrano, N.V. Sochinskii and E. Dieguez; Presented at *"The eleventh international conference on crystal growth (ICCG XI)*", The Hague (The Netherland), June 18-23, 1995.

3. Elimination of Te precipitates from CdTe wafers. - N.V. Sochinskii, M.D. Serrano, E. Dieguez, F. Agullo-Rueda, **U. Pal**, J. Piqueras, P. Fernández; Presented at *"The eleventh international conference on crystal growth (ICCG XI)"*, The Hague (The Netherland), June 18-23, 1995.

4. Near band gap photoreflectance studies in CdTe, CdTe: V and CdTe: Ge crystals. – **U. Pal**, J.L. Herrera Perez, J. Piqueras and E. Dieguez; Proc. of the *"4th International Workshop on Beam Injection Assessment of Defects in Semiconductors (BIADS-4)"*, June 3-6, 1996, El Escorial, Spain, P 70.

5. Photoluminescence property of Si/MgO and Si/ZnO nanocomposites. – N. Koshizaki, H. Umehara, T. Sasaki, T. Oyama and **U. Pal**; Proc. of "*The first NIMC International Symposium on the Photoreaction Control and Photofunctional Materials [PCPM'98]"* March (16-18, 1998, NIMC, Tsukuba, Japan. P4-17.

6. Spatial distribution of luminescence in CdTe wafers. – **U. Pal**, P. Fernandez, J. Piqueras, M.D. Serrano and E. Dieguez; Presented at the "*Fifth International Conference on Defect Recognition and Image Processing (DRIP-V)"* 1993, Santander, Spain.

7. Electron and ion-beam modification of SiO micro-clusters in ZnO matrix. – **U. Pal**, G. Loaiza Gonzalez, N. Koshizaki and T. Sasaki; Presented at "The 14th International Congress on Electron Microscopy (ICEM-14)", 1998, Cancun, Mexico.

8. Structure of Si nano-clusters in ZnO matrix. – J. Garcia Serrano and **U. Pal**; Presented at the "*11th International Congress on Thin Films*" August 30-Sept. 3, 1999, Cancún, Mexico. P 63.

9. Effect of thermal treatment on the optical properties of colloidal Cu nanoparticles prepared by ion-implantation in quartz glass. – A. Bautista Hernandez, **U. Pal**, L. Rodriguez Fernandez and J.C. Cheang Wong: Presented at the "*11th International Congress on Thin Films*" August 30-Sept. 3, 1999, Cancún, Mexico. P 169.

10. Optical absorption of Cu implanted Silica. - A. Bautista Hernández, L. Meza-Montes, **U. Pal** and L. Rodríguez Fernandez; Presented at the "*IX Congreso Latinoamericano de Ciencias de Superficies y sus Aplicaciones*" July 5-9, 1999, La Habana, Cuba. P 71.

11. Quantum confinement in GaAs nanoparticles incorporated in SiO_2 matrix. – A. Bautista Hernandez, L. Meza Montes, **U. Pal,** J. Garcia Serrano, N. Koshizaki and T. Sasaki; Presented at the "March meeting of the American Physical Society, 2000", Proc. of APS, P 321.

12. Study of the optical absorption of Cu clusters in the Cu/ZnO system. - O. Vazquez-Cuchillo, A. Bautista-Hernández, **U. Pal** and L. Meza-Montes; *"III workshop on optoelectronic materials and their applications (including solar cells)"*, August 28th-september 1st, 2000. P 27.

13. Preparation and characterization of Cu/ZnO nanocomposites. - O. Vazquez-Cuchillo, **U. Pal** and C. Vazquez-López; *"III workshop on optoelectronic materials and their applications (including solar cells)"*, August 28th-september 1st, 2000. P 35.

14. Synthesis and characterization of Au/ZnO nanocomposites. - E. Aguila-Almanza, **U. Pal** and N. Koshizaki, T. Sasaki, S. Terahuchi; *"III workshop on optoelectronic materials and their applications (including solar cells)"*, August 28th-september 1st, 2000. P 36.

15. Cathodoluminescence in Europium doped KCl crystals. – R. Aceves, R. Perez Salas, M. Barboza Flores, **U. Pal**, M. Herrera Zaldivar and J. Piqueras; Proc. of the "*International Conference on the Defects in Insulating Materials*", April 2000, South Africa. P Mo1.

16. Synthesis of GaAs nanoparticles embedded in SiO_2 matrix by radio frequency co-sputtering. – **U. Pal**, A. Bautista Hernandez, N. Koshizaki, T. Sasaki and S. Terauchi; Proc. of the "*Fifth International Congress on Nanostructured Materials*" August 20-25, 2000, Sendai, Japan. P 205.

17. Preparation of Au/ZnO nanocomposites by radio frequency co-sputtering. – **U. Pal**, E. Aguila Almanza, N. Koshizaki, T. Sasaki and S. Terauchi; Presented at *the "International Materials Research Congress",* August 27-31, 2000, Cancun, Mexico. P 86.

18. Synthesis of Cu/ZnO nanocomposites by radio frequency co-sputtering technique. – O. Vazquez Cuchillo, U. Pal, C. Vazquez Lopez; Presented at *the "International Materials Research Congress"*, August 27-31, 2000, Cancun, Mexico. P 86.

19. Infrared absorption and TEM of Au_3 nanocluster formation in Au/ZnO composites. – E. Aguila Almanza, **U. Pal**, J. Garcia Serrano, N. Koshizaki, T. Sasaki and S. Terauchi; Proc. of the "*1st Iber American Workshop on Nanostructures for Application in Micro- and Optoelectronics*", November 20-24, 2000, Mexico, P 62.

20. A study of the formation of Cu/ZnO composites deposited by r.f. co-sputtering technique. – O. Vazquez Cuchillo, **U. Pal**, C. Vazquez Lopez; Proc. of the "*1st Iber American Workshop on Nanostructures for Application in Micro- and Optoelectronics*", November 20-24, 2000, Mexico, P 66.

21. Preparation of Ge/ZnO nanocomposites by alternate radio-frequency sputtering. - **U. Pal**, G. Casarrubias Segura, O. Zarate Corona; "*VII International Conference on Advanced Materials 2001*", August 26-30, 2001, Cancun, Mexico. P 266.

22. Study of the structure and optical properties of Si/ZnO nanocomposites. -J. Garcia Serrano**, U. Pal,** G. Martines Montes; "*Applied Statistical Physics Molecular Engineering Conference",* July 23-27, 2001, Cancun, Mexico.

23. Preparation of Au/Al_2O_3 nanocomposite thin films by radio frequency co-sputtering. - J. Garcia Serrano, **U. Pal** and O. Vazquez Cuchillo; "*Applied Statistical Physics Molecular Engineering Conference",* July 23-27, 2001, Cancun, Mexico.

24. Au/ Al_2O_3 Nanocomposite thin films prepared by radio frequency co-sputtering. - J. Garcia Serrano, **U. Pal**, O. Vazquez Cuchillo; "*VII International Conference on Advanced Materials 2001*", August 26-30, Cancun, Mexico, p 10.

25. Studies on the vibrational frequencies of Si_3 clusters in Si/ZnO composite films. - A. Bautista Hernández, J. Garcia Serrano, **U. Pal**, J.F. Rivas Silva; Presentado en "*VII International Conference on Advanced Materials 2001*", August 26-30, Cancun, Mexico, P16.

26. Calculation of vibrational frequencies of Cu clusters formed in ZnO matrix. - A. Bautista Hernández, O. Vazquez Cuchillo, **U. Pal**, E. Chigo-Anota; presentado en "*VII International Conference on Advanced Materials 2001*", August 26-30, Cancun, Mexico, p 84.

27. Preparation of polymer protected Au/Pd bimetallic nanoparticles prepared by simultaneous reduction of $HAuCl_3$ and $PdCl_3$.- J.F. Sánchez Ramírez, **U. Pal**; presentado en "*VII International Conference on Advanced Materials 2001*", August 26-30, Cancun, Mexico. P 276.

28. Electrical Resistivity of the Cu/ZnO nanocomposites synthesized by r.f. co-sputtering technique. - O. Vazquez Cuchillo, C. Vazquez Lopez and **U. Pal**, Presentado en "*VII International Conference on Advanced Materials 2001*", Cancun, 26-30 Agosto, Cancun, México, P 281.

29. Electron microscopic characterization of bimetallic Au/Pd nanoparticles. - J.F. Francisco-Ramirez, G.A. Diaz-Guerro, A. Vazquez-Zavala, **U. Pal**, Presentado en *"Latinamerican Congress on Electron Microscopy*", October 1-5, 2001, Veracruz, Mexico.

30. Preparation and photoelectrochemical behavoiur of Pt/ZnO composite films. - **U. Pal,** G. Casarrubias segura, J. Garcia Serrano, N. Koshizaki, T. Sasaki and Jong-Won Yoon*; XI International Materials Research Congress,* August 25-29, 2002, Cancun, Mexico. P 1-15.

31. Evidence of Cux Nanoclusters formed in Cu/ZnO composites studied by infrared spectroscopy. - O. Vazquez Cuchillo, **U. Pal**, A. Bautista Hernandez, F. Chavez; "*XI International Materials Research Congress*, August 25-29, 2002, Cancun, Mexico. P 12-5.

32. Microstructure and electron distribution study in Au/Pd nanoparticles. - J.F. Sanchez Ramirez, **U. Pal**, G. Diaz, A. Vazquez Zavala, N. Koshizaki and T. Sasaki; "*XI International Materials Research Congress"*, August 25-29, 2002, Cancun, Mexico. P 11-7.

33. Chemoselective Immobilization of Colloidal dispersions of Polymer-protected Au/Pd Nanoparticles onto Lipid Films. - J.F. Sanchez Ramirez, E. Galicia Perez, F. Silva Andrade and **U. Pal**; "*XI International Materials Research Congress"*, August 25-29, 2002, Cancun, Mexico. P 11-4.

34. Study of the infrared absorption of Au/ Al_2O_3 Nanocomposite films. - J. Garcia Serrano, **U. Pal;** *XI International Materials Research Congress*, August 25-29, 2002, Cancun, Mexico. P 15-6.

35. Photoelectrochemical behaviour of the Cu/ZnO nanocomposite electrodes prepared by co-sputtering technique. - **U. Pal**, G. Casarrubias Segura, O. Vazquez Cuchillo, J. Garcia Serrano, N. Koshizaki, T. Sasaki and Jong-Won Yoon; *XI International Materials Research Congress*, August 25-29, 2002, Cancun, Mexico. P 15-8.

36. Semiconductor and metal nanocomposites: preparation, characterization and applications. - **U. Pal.** *"First International on Nano-structured Materials for New Energy Systems, Conversions and Applications"*, February 27-28, 2003, Mexico City, Mexico.

37. Characterization of nano-structured Pd/Ni incorporated metal hydride for energy storage application. - S.A. Gamboa, G. Canizal, J.A. Ascencio, H.B. Liu, P.J. Sebastian, X. Wang, **U. Pal**, A.M. Hermann and R. Peréz., presented in *"Gordon Research Conference, Hydrogen-Metal Systems"*, July 13-18, 2003, Colby College, Waterville, ME., USA.

38. Structural and Optical Characterization of M/ZnO (M=Au, Cu, Pt) Nanocomposites. - **U. Pal,** J. Garcia Serrano, G. Casarrubias Segura, N. Koshizaki, T. Sasaki and Jong-Won Yoon., presented in "*The 4th International Conference on Intelligent Processing and Manufacturing of Materials" IPMM2003*., May 18-23, 2003, Sendai, Japan.

39. Preparation and Characterization of Au/Cu Bimetallic Nanostructured Colloids. - J.F. Sánchez-Ramírez, R. Pérez Campos, S. Gamboa and **U. Pal**., presented in *"The 4th International Conference on Intelligent Processing and Manufacturing of Materials" IPMM2003*, May 18-23, 2003, Sendai, Japan.

40. Formation of Cu_x clusters in Cu/ZnO nanocomposites studied by IR sepectroscopy. - **U. Pal**, O. Vazquez Cuchillo and J. Garcia Serrano, presented in *"Optics of Surfaces and Interfaces" (OSI-V)*, May 26-30, 2003, Leon, Mexico.

41. Drastic Improvement of Electrical Properties of Nafion Membrane on Impregnation of Bimetallic Au/Pd Nanoclusters. - **U. Pal**, J.F. Sánchez-Ramírez, S.A. Gamboa and P.J. Sebastian., Presented in *"Optics of Surfaces and Interfaces" (OSI-V)*, May 26-30, 2003, Leon, Mexico.

42. Ab initio calculation of the ground state of PtY alloy. - A. Bautista Hernandez, J.F. Rivas-Silva, and U. Pal, *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P 8-11.

43. Characterization of sputtered deposited nitrided NiCr on stainless steel and carbon steel for bipolar plates. - S. Valumani, **U. Pal**, P.J. sebastian and J.A. Ascencio, *"II International Applied Statistical Physics Molecular Engineering Conference", Sesion "Fuel Cells: Recent developments and Applications"*, August 25-29, 2003, Puerto. Vallarta, Jalisco, Mexico. P 165.

44. Nanostructured Materials for Fuel Cell Applications. - **U. Pal**, *"II International Applied Statistical Physics Molecular Engineering Conference", Sesion "Fuel Cells: Recent developments and Applications"*, August 25-29, 2003, Puerto. Vallarta, Jalisco, Mexico. P 164.

45. Electrochemical investigation of modified Nafion 112 membrene by Pd/Au based nanoclusters in an experimental 5W PEM Fuel Cell. - **U. Pal,** J.F. Sanchez-Ramirez, S.A. Gamboa, J. Moreira, A. Rivera, A. del Valle, E. Valenzuela, and P.J. Sebastian, *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P 13-2.

46. Study of Au/Al_2O_3 nanocomposites by FTIR and XPS spectroscopies. - J. Garcia Serrano, A. Galindo G., and **U. Pal**. *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P 9-11.

47. Influence of post deposition heat treatment on the opto-electronic properties of CdTe/CdS solar cells. - X. Mathew, J. Pantoja Enriquez, G.P. Hernandez, G. Casarrubias-Segura, C.M. Raul, D.R. Acosta, **U. Pal**, and P.J. Sebastian. *"International Congress of Materials Research 2003"*, August, 17-21, 2003, Cancun, Mexico. P 4-10.

48. Nanostructured $CuInSe_2$ thin films synthesized by pulse electrodepostion and chemical precipitation. - R. Mejia, P.J. Sebastian, **U. Pal**, S. Velumani, R. Castana, J. Ascencio, S.A. Gamboa, X. Mathew, G. Canizal. *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P 34-2.

49. Pulsed electrodeposited and chemically synthesized nanostructured CdSe thin films. - L. Ixtlico, S. Velumani, **U. Pal**, P.J. Sebastian, J.A. Ascencio, S.A. Gamboa, G. Canizal, X. Mathew. *"International Congress of Materials Research.2003"*, August, 17-21, 2003, Cancun, Mexico. P 31-2.

50. Nano-structured Pd/Ni incorporated metal hydride for energy storage applications. - M.A. Rivera, P.J. Sebastian, **U. Pal**, J.F. Sanchez Ramirez, X. Wang and S.A. Gamboa. *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P22-2

51. Growth and chracterization of CdS and CdSe nanorods. - **U. Pal**, P. Santiago, S. Velumani, J.A. Chavez and J.A. Ascencio. "International Congress of Materials Research 2003", August 17-21, 2003, Cancun, Mexico.

52. Nitrided NiCr coated bipolar plates for PEM fuel Cells. - S. Velumani, **U. Pal**, P.J. Sebastian, J.A. Ascencio, A. del Valle, Shine Josheph, J. Moreira, G. Pedroza. *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P 16-2.

53. Synthesis and characterization of Nanostructured Zirconium based solid Electrolytes for low temperature solid oxide Fuel Cell Applications. -P.J. Sebastian, **U. Pal**, S.A. Gamboa, M.A. Cortes-Jacome, J.A. Toledo. *"II International Applied Statistical Physics Molecular Engineering Conference", Sesion "Fuel Cells: Recent developments and Applications"*, August 25-29, 2003, Puerto. Vallarta, Jalisco, Mexico. P 185.

54. Characterization of Ge/ZnO nanocomposites by Raman spectroscopy. - G. Gasarrubias Segura, **U. Pal**, X. Mathew, J. Garcia Serrano, *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P 20-1.

55. Trends in Nanomaterials Research for opto-electronic Devices. - P.J. Sebastian, S.A. Gamboa, X. Mathew, S. Velumani, **U. Pal**, J. Ascencio, T. Mahalingam, J.A. Chavez, J.A. Toledo, J. Pantoja, R. Castañeda, R. Mejia, L. Ixtlico, A. Olea, M. Pal, R. Gutiérrez, J. Campos, M.S. Sastry, M. Pattabi, V. Singh, *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P 4-19.

56. Bimetallic Nanostructures: Synthesis and Characterizations. - **U. Pal**, *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P 4-1.

57. Structure of Metallic and Semiconductor Nanorods. - J.A. Ascencio, **U. Pal**, S. Velumani, G. Canizal and P. Santiago, *"International Congress of Materials Research 2003"*, August 17-21, 2003, Cancun, Mexico. P 9-1.

58. Bio-reduction synthesis and structure determination of Zn nanoparticles. - G. Canizal, P. Schabes-Retchkiman, **U. Pal**, H.B. Liu and J.A. Ascencio; *"International Materials Research Congress 2004"*, August 22-26, 2004, Cancun, Mexico. P 1-23.

59. Size and shape controlled ZnO nanostructures produced through a simple chemical rout. - **U. Pal**, P. Santiago; *"International Materials Research Congress 2004"*, August 22-26, 2004, Cancun, Mexico. P 1-35.

60. Incorporation of Pd/Ni based nanoparticles as precursor for the initial stage of hydrogen absorption in a $MmNi_{5-x}M_x$ related alloy. - M.A. Rivera, **U. Pal**, S.A. Gamboa, A. Keer, V. Ramos and P.J. Sebastian; *"International Materials Research Congress 2004"*, August 22-26, 2004, Cancun, Mexico. P 2-13.

61. Study of the presence of Pt/Au nanoparticles deposited in situ in MEA´s using nafion membrane 115.- E. Valenzuela, S.A. Gamboa, P.J. sebastian, J. Moreira, G. Pedroza, **U. Pal** and J.F. Sanchez ramirez; *"International Materials Research Congress 2004"*, August 22-26, 2004, Cancun, Mexico. P 2-15.

62. Synthesis abd characterization of a novel ion-exchange polymer for fuel cell applications. -J. Garcia Serrano, Ana M. Herrera and **U. Pal**; *"International Materials Research Congress 2004"*, August 22-26, 2004, Cancun, Mexico. P 2-17.

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40. Structural Análisis of Nanocomposites of Ge/ZnO. - G. Casarrubias-Segura, **U. Pal** and O. Zárate-Corona, "*XXII Congreso Nacional de Sociedad Mexicana de Superficies y Vacio",* September 30 – October 4, 2002. Veracruz, Mexico. P39.

41. Estudio Comparativo Mediante Dinamica Molecular de Nanopartículas Bimetálicas de Cu/Pd Recubiertas con PVP Crecidas Bajo Diferentes Solventes. - M. López-Fuentes, J.F. Rivas-Siva, **U. Pal**, "*XLV Congreso Nacional de Física*", October 28 - November, 2002. León, Guanajuato, Mexico. P5.

42. Analisis por Espectroscopia Raman de Nanocompósitos de Ge/ZnO. - G. Casarrubias-Segura, O. Zárate-Corona, **U. Pal**, "*XLV Congreso Nacional de Física*", October 28 - November, 2002. León, Guanajuato, Mexico. P103.

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44. Estudio de Nanoparticulas de Oro: Experimento vs. Teoria de Mie.- M. Lopez Fuentes, F. Rivas-Silva, **U. Pal**, J.F. Sanchez Ramirez, *"XLVII Congreso Nacional de Fisica"*, October 27-31, 2003. Merida, Mexico. P 82.

45. Shape and structure of Bimetallic Nanoparticles. - J.M. Montejano Carrizales, J.L. Rodriguez Lopez, **U. Pal**, J. Sanchez, D. Garcia, M. Miki Yoshida, M. Jose Yacaman, *"XLVII Congreso Nacional de Fisica"*, October 27-31, 2003. Merida, Mexico. P 109.

46. Crecimiento de nanoparticulas coloidales de ZnS y su caracterización. - J.L. Morales Ayala, J.A. Ascencio, **U. Pal**. *"XXII Congreso Nacional de Sociedad Mexicana de Ciencia de Superficies y Vacio"*, September 29 - November 2, 2003. Mexico. P 37.

47. Síntesis y caracterizacion de nanocompositos de Au/ZnO por difracción de raoys-X (XRD) y microscopia electronica de transmisión (TEM). - E. Aguila, **U. Pal**, presented in *"Cuarto Congreso Nacional de Sociedad Mexicana de Cristalografia"*, November 10-14, 2003. Morelia, Michoacán, Mexico. P 123.

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49. El Ion $AuCl_4^-$ en la etapa previa a la formación de nanoparticulas de oro. - M. Lopez Fuentes, J.F. Rivas Silva, **U. Pal;** presented in **"***XLVII Congreso Nacional de Fisica*", October 25-29, 2004. Hermosillo, Sonora, Mexico. P 32.

50. Estudio elipsometrico de películas delgadas nanocompositoas de Au-Al_2O_3.- C. Trejo Cruz, A. Mendoza Galvan, J. Garcia Serrano, **U. Pal**; "*XXV Congreso Nacional de la Sociedad Mexicana de Ciencia y Tecnología de Superficies y Materiales*", September 26-30, 2005. Zacatecas, Mexico. P 137.

51. Síntesis and optical properties of Au-Ag-Pd trimetallic nanoparticles. - J.F. Sanchez-Ramirez, A. Bautista Hernandez, J.L. Herrera Perez, D. Comejo-Monroy, J.A. Pescador-Rojas and **U. Pal**; presented in "*XXV Congreso Nacional de la Sociedad Mexicana de Ciencia y Tecnología de Superficies y Materiales*", September 26-30, 2005. Zacatecas, Mexico. P 139.

52. Efecto del dopaje con iones metalicos sobre las propiedades ópticas de películas delgadas nanocristalinas de ZnO. - A. Mendoza-Galvan, C. Trejo-Cruz, J. Lee, J. Metson, and **U. Pal**; presented in "*XXV Congreso Nacional de la Sociedad Mexicana de Ciencia y Tecnología de Superficies y Materiales*", September 26-30, 2005. Zacatecas, Mexico. P 13.

53. Absorción y fotoluminiscencia en películas de ZnO dopadas con Ge: Experimento y modelacón. - C.E. Hernandez, J.A. González Martínez, A.K. Bello, P.P. Padilla, **U. Pal**, J.A. Reyes-Esqueda; presented in "*XLVII Congreso Nacional de Física*"; October 17-21, 2005. University of Guanajuato, Leon, Mexico. P 127.

54. Cathodoluminescence study of ZnO: In nanowires. - A. Gonzalez Carrazco, M. Herrera Zaldivar, J. Valenzuela Benavides, A. Escobedo Morales, **U. Pal**; presented in "Mexican workshop on Nanostructured Materials", May 2-4, 2006. Puebla, Mexico. P 25.

55. Synthesis of stable bimetallic Ru-Pt nanoparticles. - I. Moreno Preza, C. Luna Perez, P. Santiago, **U. Pal**, presented in "*Mexican workshop on Nanostructured Materials*", May 2-4, 2006. Puebla, Mexico. P 48.

56. Structural characterization of chemically synthesized Au nanoparticles. - E. Esparza, G. Rosas, M. Lopez Fuentes, **U. Pal,** R. Perez; presented in "*Mexican workshop on Nanostructured Materials*", May 2-4, 2006. Puebla, Mexico. P 56.

57. Diffuse reflectance spectroscopy: An efficient technique for optical characterization of un-supported nanostructures. - A. Escobedo Morales, **U. Pal**, E. Sanchez Mora; presented in "*Mexican workshop on Nanostructured Materials*", May 2-4, 2006. Puebla, Mexico. P 62.

58. Effects of deposition parameters on the optical and microstructural characteristics of sputtered deposited nanocrystalline ZnO thin films. - D. Cornejo-Monroy, J.F. Sanchez Ramirez, M. Herrera Zaldivar, **U. Pal**; presented in "*Mexican workshop on Nanostructured Materials*", May 2-4, 2006. Puebla, Mexico. P 63.

59. Synthesis of triangular ZnO nanoparticles by thermolysis of zinc acetate. - E. Navarro Ceron, **U. Pal**, A. Escobedo Morales, R. Silva Gonzalez, J.M. Gracia Jiménez, J. Garcia Serrano, Mou Pal; "*Mexican workshop on Nanostructured Materials*", May 2-4, 2006. Puebla, Mexico. P 66.

60. Self-assembled nanoelectrodes for PEM fuel cells. - E. Valenzuela, P.J. Sebastian, **U. Pal**, S. Serna, B. Campillo, and S.A. Gamboa; presented in "*Mexican workshop on Nanostructured Materials*", May 2-4, 2006. Puebla, Mexico. P 81.

61. Study of Defects in ZnO:Yb by Cathodoluminescence and Tunneling Microscopy. - A. Susarrey, M. Herrera, J. Valenzuela, and **U. Pal**; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 20.

62. TL and OSL Properties of TiO_2:Yb Nanophosphors.- Mou Pal, **U. Pal**, V. Chernov, R. Meléndrez, M. Barboza-Flores; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 24.

63. Green Synthesis of Au and Ag Nanoparticles. - J. Garcia-Serrano, A. M. Herrera, P. Salas, C. Ángeles-Chávez, and **U. Pal**; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 38.

64. Effect of Iron Substitution on Microstructure and Optical Properties of Nanocrystalline $CaTiO_3$.- S. Mondal, Manisha Pal, **U. Pal**, and M. Pal; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 57.

65. A Novel Approach for the Synthesis Vertical ZnO Nanorods on Glass Substrate by Simple Chemical Method. - P. Suresh Kumar, M. Yogeswari, D. Nataraj, D. Mangalaraj, and **U. Pal**; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 68.

66. Synthesis of Size Selective SiO_2 Colloidal Spheres. - D. Cornejo-Monroy, J. F. Sánchez-Ramírez, E. Espíndola, and **U. Pal**; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 87.

67. Synthesis of True Au-Ag Alloy Nanoclusters with Controlled Composition. - L. Nolasco-Hernández, J. F. Sánchez-Ramírez, J. A. Pescador-Rojas, **U. Pal**, and P. Santiago; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 91.

68. Effect of pH-Adjusted on the Formation and Structure of Gold Nanoparticles. - R. Esparza, G. Rosas, M. López-Fuentes, **U. Pal**, and R. Pérez; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 92.

69. Synthesis of Monodispersed Au-Pd Bimetallic Nanoparticles of Core-Shell and Alloy Structures. - L. Ruiz Peralta, **U. Pal**, and P. Santiago; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 93.

70. Extracción de Características de Nanoestructuras Metálicas con Técnicas de Reconocimiento de Patrones y Visión por Computadora. - J.A. Lombardero Chartuni, E. Juárez-Ruiz, J. C. Moctezuma, **U. Pal**, J.A. Ascencio; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico.P 107.

71. Cálculo del Módulo de Young de Superficies de Metales *fcc*. - A. Bautista-Hernández, J. H. Camacho-García, and **U. Pal**; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 113.

72. Synthesis and Characterization of Ag nanoparticles Doped with Ion-exchange Compounds. - J. García-Serrano, A. M. Herrera, M. Ocampo-Fernández, and **U. Pal**; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 119.

73. Incorporation of Yb Atoms in TiO_2 Nanoparticles through Room Temperature Chemical Synthesis. - Mou Pal, Rutilo Silva, E. Aparicio Ceja, P. Santiago, and **U. Pal**; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 125.

74. Forma Geométrica y Crecimiento de Nanoestructuras Metálicas. - E. Juárez-Ruiza, J. A. Lombardero-Chartunia, L.C. Gómez-Pavón, J. A. Ascencio, and **U. Pal**; "*2nd Mexican Workshop on Nanostructured Materials*", May 15-17, 2007. Puebla, Mexico. P 129.

75. Estudio del transporte térmico de nanofluidos conteniendo nanoparticulas bimetálicas tipo Au@Ag.- J.F. Sanchez Ramirez, J.A. Pescador-Rojas, L. Nolasco-Hérnandez, J.L. Jiménez-

Pérez, J.G. Mendoza-Alvarez, **U. Pal**; "*XXVII National Congress of Mexican Society of Science and Technology of Surfaces and Materials*", September 24-28, 2007. Oaxaca, Mexico. P 50.

76. Temperature dependence of exciton and defect related luminescence in indium doped ZnO nanostructures. - A. Escobedo Morales, R. Aceves, **U. Pal**, and J.Z. Zhang; "*XXVII National Congress of Mexican Society of Science and Technology of Surfaces and Materials*", September 24-28, 2007. Oaxaca, Mexico. P 173.

77. Nanoestructuras de ZnO y TiO_2 dopados con tierras raras. - **U. Pal**; "*2ª Reunion Nacional de Division de Nanociencia y Nanotecnologia de la Sociedad Mexicana de Fisica*", May 30 – June 1, 2007. Boca del Rio, Veracruz, Mexico. P 17.

78. Effect of opto-electronic doping on the morphology and optical properties of nanostructured ZnO. - A. Escobedo Morales, and U. Pal; "*2ª Reunion Nacional de Division de Nanociencia y Nanotecnologia de la Sociedad Mexicana de Fisica*", May 30 – June 1, 2007. Boca del Rio, Veracruz, Mexico. P 31.

79. Effect of Optoelectronic Doping on Luminescence Properties and Normal Vibrational Modes of Nanostructured ZnO. - A. Escobedo Morales and **U. Pal**; "*VII Taller Nacional de Estudiantes de Posgrado de Física y Ciencia de Materiales (VII TNEPFCM)*", March 11-13, 2008. Puebla, Mexico.

80. Estudio de las Propiedades Ópticas y Estructurales de Nanoestructuras de ZnO Sintetizadas por la Técnica de Termólisis. - J. G. Muñoz, A. Escobedo Morales and **U. Pal**; "*VII Taller Nacional de Estudiantes de Posgrado de Física y Ciencia de Materiales (VII TNEPFCM)*", March 11-13, 2008. Puebla, Mexico.

81. Síntesis de Nuevos Monómeros y Polímeros con Grupos Ácido Fosfónico Para Aplicaciones en Celdas de Combustible. - M. Ocampo-Fernández, J. García-Serrano, Ana M. Herrera, Armando R. Hernández, and **U. Pal**; "*VII Taller Nacional de Estudiantes de Posgrado de Física y Ciencia de Materiales (VII TNEPFCM)*", March 11-13, 2008. Puebla, Mexico.

82. Síntesis de Nanoestructuras de ZnO Dopadas con Eu. - J.G. Muñoz Hernandez, R. Silva González, and **U. Pal**; "*VII Taller Nacional de Estudiantes de Posgrado de Física y Ciencia de Materiales (VII TNEPFCM)*", March 11-13, 2008. Puebla, Mexico.

83. Preparation of Mono-Dispersed SiO_2 Colloids. - D. Cornejo Monroy, **U. Pal**, J. F. Sánchez Ramírez, and M. E. Sánchez; "VII Taller Nacional de Estudiantes de Posgrado de Física y Ciencia de Materiales (VII TNEPFCM)", March 11-13, 2008. Puebla, Mexico.

84. Fotoluminiscencia del Silicio Poroso. - T. Flores Arroyo, **U. Pal**, and A. Méndez Blas; "*VII Taller Nacional de Estudiantes de Posgrado de Física y Ciencia de Materiales (VII TNEPFCM)*", March 11-13, 2008. Puebla, Mexico.

85. Photocatalytic Decomposition of Methylene Blue Over Yb Doped TiO2 Nanoparticles. - Mou Pal, **U. Pal**, Enrique Sánchez Mora, and Patricia Santiago; "*VII Taller Nacional de Estudiantes de Posgrado de Física y Ciencia de Materiales (VII TNEPFCM)*", March 11-13, 2008. Puebla, Mexico.

86. Estudio de la Actividad Fotocatalítica de los Nanocompositos de Ag-TiO2.- E. Gómez, E. S. Mora, y **U. Pal**; "*VII Taller Nacional de Estudiantes de Posgrado de Física y Ciencia de Materiales (VII TNEPFCM)*", March 11-13, 2008. Puebla, Mexico.

87. Effect of Antimony Doping on the Morphology and Luminescence Properties of Zinc Oxide Nanostructures. - A. Escobedo Morales and **U. Pal**; "*3rd Mexican Workshop on Nanostructured Materials*", June 11-13, 2008. Mexico City, Mexico.

88. Caracterización Óptica y Morfológica de Nanoestructuras de ZnO Dopadas con Samario. - G. Muñoz Hernández, **U. Pal**, A. Escobedo Morales, R. Silva González, and Rosendo Andrés, "*3rd Mexican Workshop on Nanostructured Materials*", June 11-13, 2008. Mexico City, Mexico.

89. Chemical Ordering in Ir-Pt, Rh-Pd and Pd-Ag Nanoclusters. - J. A. Reyes-Nava, **U. Pal**, and E. Valenzuela-Mondaca, "*3rd Mexican Workshop on Nanostructured Materials*", June 11-13, 2008. Mexico City, Mexico.

90. Formación de Nanopartículas Poliédricas de Au por Reducción con Polímeros Iónicos. - J. García-Serrano, A. M. Herrera, and **U. Pal**, "*3rd Mexican Workshop on Nanostructured Materials*", June 11-13, 2008. Mexico City, Mexico.

91. Nanofluids Containing Monodisperse SiO_2 Nanospheres with Different Sizes and Concentrations. - D. Cornejo Monroy, J. F. Sanchez-Ramirez, J. A. Balderas-Lopez, **U. Pal**, J. G. Mendoza Alvarez, and M. E. Sánchez-Espíndola, "*3rd Mexican Workshop on Nanostructured Materials*", June 11-13, 2008. Mexico City, Mexico.

92. Synthesis and Characterization of Colloidal Platinum Nanoparticles for PEMFC Applications. - B. Escobar Morales, S.A. Gamboa, **U. Pal**, Rene Guardián, D. Acosta, Carlos Magaña, and X. Mathew, "*3rd Mexican Workshop on Nanostructured Materials*", June 11-13, 2008. Mexico City, Mexico.

93. Synthesis, Characterization and Photocatalytic Application of Yb Doped TiO_2 Nanoparticles. - Mou Pal, **U. Pal**, R. Silva, and E. Sanchez. Mora, "*3rd Mexican Workshop on Nanostructured Materials"*, June 11-13, 2008. Mexico City, Mexico.

94. Efecto de la Concentración de HF en Propiedades de Emisión de Silicio Poroso. - T Flores-Arroyo, A Méndez-Blas, and **U Pal**, "*3rd Mexican Workshop on Nanostructured Materials*", June 11-13, 2008. Mexico City, Mexico.

95. Synthesis and thermal stability of bimetallic nanoparticles. - **U. Pal**, H.B. Liu, P. Santiago, and J.F. Sanchez Ramirez; *"Joint Mexican-German topical Workshop. New opportunities for the understanding of structure-property relations of inorganic complex materials*", September 1-5, 2008. Puerto Escondido, Oaxaca, Mexico.

96. Effect of Ag doping on the optical properties of ZnO nanoparticles. - R. Sánchez-Zeferino, A. Escobedo-Morales, M. Barboza-Flores, and **U. Pal**; *NanoMex-2010* (Encuentro Internacional e Interdisciplinario em Nanociencia y Nanotecnologia-2010), December 18-19, 2010. Cuernavaca, Morelos, México.

97. Fabricating iron oxide nanoparticles in hematite and magnetite phases by hydrothermal method. C.L. Gómez Muñoz, **U. Pal**; *NanoMex-2010* (Encuentro Internacional e Interdisciplinario em Nanociência y Nanotecnologia-2010), December 18-19, 2010. Cuernavaca, Morelos, México.

98. ZnO/Ag nanocomposites grown by microwave assited chemical synthesis. - L. Ruiz Peralta, and **U. Pal**; *NanoMex-2010* (Encuentro Internacional e Interdisciplinario em Nanociência y Nanotecnologia-2010), Dicember 18-19, 2010. Cuernavaca, Morelos, México.

99. Optical properties of hydrothermally grownAg doped SnO2 nanoparticles. - R. Sánchez Zeferino, A. Escobedo Morales, **U. Pal**; *LIII Congreso Nacional de Física*, October 25-29, 2010. Boca del Rio, Veracruz, Mexico. P156.

100. Synthesis of iron oxide nanoparticles with hematite and magnetite phases through low temperature hydrothermal process C.L. Gómez, Muñoz, **U. Pal**; *LIII Congreso Nacional de Física*, October 25-29, 2010. Boca del Rio, Veracruz, Mexico. P194.

101. Microwave assisted Chemical Synthesis of ZnO Nanostructures of Varied Morphology Maria de Lourdes Ruiz Peralta Raul Sánchez Zeferino **Umapada Pal**; *LIII Congreso Nacional de Física*, October 25-29, 2010. Boca del Rio, Veracruz, Mexico. P195.

102. Characterization of Ruthenium-doped Zinc Oxide thin films deposited by the sol-gel technique. - L. Castañeda, **U. Pal**; NANOTECH-2011. May 23-25, 2011. Tuxtla Guttierez, Chiapas, Mexico.

103. PL and TL properties of Ag-doped SnO_2 nanoparticles. - R. Sánchez-Zeferino, U. Pal, R. Melendrez, and M. Barboza-Flores; NANOTECH-2011. May 23-25, 2011. Tuxtla Guttierez, Chiapas, Mexico.

104. Gold nanoparticle decorated ZnO nanorods fabricated by microwave assisted chemical synthesis. – Ma. De L. Ruiz Peralta, E. Rubio Rosas, and **U. Pal**; NANOTECH-2011. May 23-25, 2011. Tuxtla Guttierez, Chiapas, Mexico.

105. Effect of Hydrothermal treatment on the Particle size, Crystallinity, and defect structure of Magnetite (Fe_3O_4) Nanoparticles. - S.I. Uribe, and **U. Pal**; NANOMEX-2011, November 9-11, 2011. Merida, Yucatan, Mexico.

106. Multifunctional metal oxide nanostructures and application potentials. - **U. Pal**, "*XIX Reunión Universitaria de Investigación en Materiales*, November 19-21, 2014. Hermosillo, Sonora, Mexico.

107. Effect of incorporation of large plasmonic nanoparticles on the electrodynamics and photovoltaic performance of dye sensitized solar cells. - J. Villanueva-Cab, J.L. Montano Priede, **U. Pal**. Tercer Simposio Internacional sobre Energías Renovables y Sustentabilidad, September 9-11, 2015. Cuernavaca, Mexico.

108. Fabricación de celdas solares sensibilizadas con tinte con la presencia de NPs de oro en capas compactas. - Jose Luis, Ortiz-Quiñonez, Julio Villanueva-Cab, **Umapada Pal**, LXIII Congreso Nacional de Física, October 4-9, 2020. México

109. Generación y eliminación de fases secundarias en nanoestructuras kesteritas de $Cu_2ZnSn_{1-x}Ge_xS_4$. - Francisco Enrique Cancino-Gordillo, Jose-Luis Ortiz-Quiñonez, **Umapada Pal**, LXIII Congreso Nacional de Física, October 4-9, 2020. México.

110. Semiconductor nanostructures in optoelectronics and photocatalytic. – **Umapada Pal**, IX simposio annual de estudiantes relacionados a la ciencia e ingeniería de materiales, May 2021. México.

111. Application of $Cu_2ZnSn_{1-x}Ge_xS_4$ (x= 0.0, 0.3 and 1.0) nanoparticles as a gap carrier in Pb-based perovskite solar cells. - Francisco Enrique Cancino Gordillo, **Umapada Pal** and Julio Villanueva Cab, Simposio estudiantil de posgrado en ciencia de materiales BUAP 2021, June 21, 2021. México.

112. Fabrication and characterization of $Ti_3T_2(OH)_x$ MXenes through HF etching protocol. – Raymundo López Cuevas, Francisco Enrique Cancino-Gordillo, Jose-Luis Ortiz-Quiñonez and **Umapada Pal**, LXIII Congreso Nacional de Física, October 12, 2024. Morelia, Michoacán, México.

Talks delivered: 77 (**45** of them are Invited talk or Plenary lectures)

1. **Scanning cathodoluminescence in Defect Characterization of Semiconductors: A few examples.** Presented in the Instituto de Fisica, Benemeríta Universidad Autónoma de Puebla, March 24, 1995. Puebla Mexico.
2. **Cathodoluminiscencia de Semiconductores:** Invited Talk, presented at the Instituto de Investigacion en Comunicación Optica (IICO), April 26, 1996. Universidad Autónoma de San Luis Potosi, Mexico,
3. **Preparation and Characterization of Si/ZnO Composite Films:** Presented at the "*Primer Congreso Nacional de Cristalografia*", November 26, 1997. San Luis Potosi, Mexico.
4. **Nano-Composites and their applications**: Invited Talk, presented at the Instituto de Investigaciones en Ciencias de la Tierra, March 11, 1999. Universidad Autonoma del estado de Hidalgo, Mexico.
5. **Preparation and Characterization of Si/ZnO nano-composites**: Presented at the Instituto de Fisica, February 19, 1999. Benemerita Universidad Autonoma de Puebla, Mexico.
6. **Synthesis of GaAs nanoparticles embedded in SiO_2 matrix by radio frequency co-sputtering:** talk presented at "*Nano 2000"***,** Convention Center, August 24, 2000. Sendai, Tohoku, Japan.
7. **Study of the optical absorption of Cu clusters in the Cu/ZnO system:** Presented at the **"***III Workshop on Optoelectronic Materials and Their Applicactions (including solar cells)*", August 30, 2000. Oaxaca, Mexico.
8. **The Nanocomposites and their Applications:** Invited Talk, presented at the Universidad Popular Autónoma de Estado de Puebla (UPAEP), October 6, 2000. Puebla, Mexico.
9. **Preparation and Characterization of Si: ZnO Nanocomposites:** Presented at the Department of Physics, Indian Institute of Technology, 28th January, 2000. Kharagpur, India.

10. **Preparation and properties of Functional and nonfunctional nanocomposits:** Invited Talk, presented at the Centro de Investigaciones en Dispositivos Semiconductores (CIDS), Benemerita Universidad Autonoma de Puebla, November 10, 2000. Puebla, Mexico.
11. **Preparation, Electrical and Optical Characterization of Cu/ZnO Nanocomposites:** Nanoarchitectonics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), November 14, 2001, Tsukuba, Japan.
12. **Preparation of Ge/ZnO Nanocomposites by Alternate Radio Frequency sputtering:** *Invited talk* presented at the "*Internationa Symposium on Solar-Hydrogen-Fuel Cells 5*", August 27, 2001, Cancun, Mexico.
13. **Ciencia de Materiales:** XII Semana de Investigacion Cientifica, Academia Mexicana de Ciencia, October, 2001. Mexico.
14. **Nanomaterials and their Applications:** Presented at the "*9ª Semana Nacional de Ciencia y Tecnologia*", October 11, 2002. Mexico.
15. **Metal and Semiconductor dispersed nanocomposites: Synthesis, characterization and applications:** *Invited talk* presented at the "*First International Workshop on Nano-structure materials for New Energy Systems, Conversions and Applications"*, Instituto Mexicano del Petroleo; February 27, 2003. Mexico.
16. **Bimetallic Nanostructures: Synthesis and Characterizations**. - *Invited talk*, presented at the *"International Congress of Materials Research"*, Session: Nanostructured Materials; August 17-21, 2003. Cancun.
17. **Nanostructured Materials for Fuel Cell Applications**. **-** Presented in the session **"***Fuel Cells, Recent Developments and Applications",* ASTATPHYS-MEX-2003, August 26, 2003. Puerto Vallarta, Jalisco, Mexico.
18. **Optical properties of nanostructured Materails**. **-** Invited talk presented at the "*Taller de Opticas Modernas"*, September 22, 2003. INAOE, Puebla, Mexico.
19. **Past Present and Future of Nanotechnology**. - Invited talk presented at the "*XLVI Congreso Nacional de Fisica*", October 27-31, 2003. Merida, Yucatán, Mexico.
20. **Nanomaterials**: **Present advances and future prospects**. - Invited talk presented at the *"IX Simposio en Fisica de Materiales",* Centro de Ciencias de la Materia Condensada, UNAM, January 28-30, 2004. Ensenada, Mexico.
21. **Nanostructured Materials for Solar Cell Applications.** - Invited talk, presented at the *"International Congress of materials Research"*, session: Solar energy Materials and Solar Cells; August 24, 2004. Cancun, Mexico.
22. **Synthesis, structure and thermodynamic behavior of bimetallic nanoparticles**. - Invited talk, imparted at the "*International Congress of materials Research*, session: Solar energy Materials and Solar Cells, August 23, 2004. Cancun, Mexico.
23. **Chemical synthesis of shape controlled ZnO nanostructures**. - Invited talk, imparted at the *"International Symposium on Advanced Materials and Processing"*, Materials Science Centre, December 6-8, 2004. Indian Institute of Technology, India.
24. **Structural instability and dynamic behavior of bimetallic nanoparticles**. - Invited talk, imparted at the *"International Symposium on Advanced Materials and Processing"*, Materials Science Centre, December 6-8, 2004. Indian Institute of Technology, India.
25. **Size, structure and composition-controlled growth of bimetallic Au/Pd nanoclusters by chemical reduction**. - Imparted at the "*International Conference on Electrochemical Power Systems"*, December 20-21, 2004. Hyderabad, India.

26. **Synthesis of ZnO nanostructures with controlled morphology**. - Imparted at the *"First Topical Meeting on Nanostructured Materials and Nanotechnology"*, CIO-2004, Centro de Investigacion en Opticas, September 22-24, 2004. Leon, Guanajuato, Mexico.
27. **Nantubes**. - Invited-talk, Intituto Tecnologico de Cierra Norte, September 24, 2004. Puebla, Mexico.
28. **Bimetallic nanoclusters**: **Synthesis, structure and thermodynamic stability**. - Imparted at the "*V International Workshop on Advanced Matereials Mexico-Korea*", January 24-27, 2005. San Luis Potosi, Mexico.
29. **Sintesis quimica de Nanostructures. -** Invited talk, presented at the Department of Chemistry, Universidad Autonoma del Estado de Mexico (UAEM), 2005. Estado de Mexico, Mexico.
30. **Nanoestructuras y Nanomanipulaciones: Durante y despues del crecimiento**. - Invited talk (Magistral Conference), presented at the "*Nanotron-2005"*, November 10, 2005. Facultad de Ciencias Electronica, Universidad Autonoma de Puebla, Mexico.
31. **Dye-sensitized solar cells: Recent progress and future prospects**. Invited talk presented at the session Solar Cells and Solar Energy Materials (symposium-4) of the *"International Congress of Materials Research 2005"*, August 23, 2005. Cancun, Mexico.
32. **Optical properties of ZnO nanostructures with different morphologies**. - Presented at the "*2nd Topical Meeting on Nanostructured Materials and Nanotechnology (Nanotech-2005)*", September 22-24, 2005. Ensenada, Mexico.
33. **Nanoestructuras de oxidos metálicos para aplicaciones en opto-electronica**. - Invited Talk, presented at the "*22 Jornadas Academicas"*, April 7, 2006. Instituto Tecnologico de Cancún, Cancún, Mexico.
34. **Síntesis de nanoestructuras semiconductoras con morfología controlada. -** Invited talk, presented at the "*VII coloquio bienal en ciencias de materiales"*, April 20, 2007. Universidad de Sonora, Hermosillo, Sonora, Mexico.
35. **Síntesis controlada de nanoparticulas metalicas y sus aplicaciones**. – Keynote lecture, presented at the "*XXII Congreso Nacional de la Sociedad Mexicana de Electroquimica y VII Semana de Geologia, Mineria, Metalurgia y Materiales*"; May 27, 2007. Pachuca, Hidalgo, México.
36. **Nanostructuras de ZnO y TiO_2 dopadas con tierras raras.** - Invited talk, presented at the "*Second Meeting of DINANO*", Mexican Physical Society (SMF), June 1, 2007. Veracruz, Mexico.
37. **Exfoliation of ZnO Nanorods**. - Department of Chemistry and Biochemistry, University of California, Santa Cruz, USA.
38. **Art of Controlling Seimocnductor Nanostructure Morphology**. - Invited Talk, presented at the "*National Seminars on Nanscience and Nanotechnology*", July 25, 2007. University of Guadalajara, Guadalajara, Mexico.
39. **Morphology and doping control in metal oxide nanostructures. -** Plenary lecture, presented at the **"***XXV of Mexican Society of Science and Technology of Surfaces and Materials*", September 24, 2007. Oaxaca, Mexico.
40. **Synthesis and thermal stability of bimetallic nanoparticles. -** Talk presented at the *"Joint mexican-German topical Workshop: New opportunities for the understanding of structure-property relations of inorganic complex materials"*, September 3, 2008. Puerto Escondido, Oaxaca, Mexico.

41. **Study of photoluminescence properties of In- Sb- and Ga-doped ZnO nanostructures**. - Presented in the "*9th International Conference on Nanostructured Materials (NANO2008)*", June 1-6, 2008. Río de Janeiro, Brazil.
42. **Size and Morphology Controlled Synthesis of SnO_2 Nanocrystals in Low Temperature Hydrothermal Process**. - Presented at the "*XVII International Materials Research Congress*", August 17-21, 2008. Cancun, Mexico.
43. **Effect of Temperature and *p*H on the Morphology, Crystallinity and Vibrational Properties of Hydrothermally Grown SnO_2 Nanostructures**. - Invited Talk, presented in the "*Fifth International Topical Meeting on Nanostructured Materials and Nanotechnology (NANOTECH 2008)*", November 24-26, 2008. México City, México.
44. **Thermal stability, melting mechanism, and chemical ordering in bimetallic nanoclusters**. - talk presented at the *Instituto de Física, benemerita Universidad Autonoma de Puebla.* September 12, 2008. Puebla, México.
45. **Controlling the morphology of metal oxide nanostructures in chemical synthesis**. - Invited Talk, presented at the "*2nd International Symposium on Advanced Materials and Polymer for Aerospace and Defence Applications (SAMPADA 2008)*", December 8-12, 2008. YASHADA MD Center, Pune, India.
46. **Materiales Nanoestructurados para Aplicaciones en Catálisis, Medicina y Óptpelectronica**. - Plenary Lecture, II Congreso Nacional de Ciencia e Ingeniería en Materiales, February 17, 2011. Universidad Autónoma de Estado de México, México.
47. **Nanoestructuras y Biotecnología: Aplicaciones Medicinales y Clínicas. -** Invited Talk, 1st Biotechnology Engineering Congress, 25th March, 2011, UPAEP, Puebla, Mexico.
48. **Nano-Diamonds: Synthesis and Applications. -** Invited Talk (Symposium 17), XX IMRC 2011, August 14-19, 2011. Cancun, México.
49. **Core-shell type composite nanoparticles for bio-medical applications**. - Invited Talk, CIICAP, June 10, 2011. University of Morelos, Cuernavaca, Mexico.
50. **Metal oxide nanostructures for optoelectronic, catalytic and biomedical applications**. - Invited Talk, October 26, 2011. CINVESTAV, Queretaro, Mexico.
51. **Porous and non-porous TiO_2 nanostructures for ambiental applications**. - Invited talk, August 13, at XXII International Materials Research Congress, 2013. Cancun, México.
52. **Diseño y Síntesis de Nanoestructuras para Aplicaciónes Especificas**. - Invited talk, Institute of Physics, December 4, 2013. Autonomous University of San Luis Potosi, Mexico.
53. **Nanostructured mixed oxides of titanium, silicon and aluminum as efficient dye absorbing materials**. - *Invited talk*, A. Sandoval, **U. Pal**, V. Sharma, and P. Mohanty, *"EMN Summer Meeting"*, (invited talk) Talk EMN-Cancun-2014, June 9-12, 2014. Cancun, Mexico.
54. **Platinum-doped Tin Oxide Nanoparticles as efficient Catalyst for Methane Oxidation**. - *Invited talk,* **U. Pal**, and G. Corro, *EMN Meeting on Ceramics 2015*, January 26-29, 2015. Orlando, FL, USA.
55. **Fabricación y Aplicaciones Emergentes de Nanoestructuras Plasmonicas**. - *Invited Seminar*, (Seminario Sotero Prieto), **U. Pal,** Department of Solid State Physics, January 21, 2015. National Autonomous University of Mexico, Mexico.
56. **Self-assembly of plasmonic nanostructures for applications as SERS substrates**. - **U. Pal**, D.N. Castillo López. Invited talk at *XXIV International Materials Research Congress*", August 15-20, 2015. Cancun, Mexico.
57. **Fabrication of ZnO multipod nanostructures through seed mediated low-temperature solution growth process**. - A. López Vazquez, J.L. Montaño Priede, E. De Anda, **U. Pal**. *XXIV International Materials Research Congress*", August 15-20, 2015. Cancun, Mexico.

58. **Morphology evolution and defect structure of 1-D In_2O_3 nanostructures grown by VLS process**. - **Umapada Pal**, Jesús Alberto Ramos Ramón, Rutilo Silva Gonzalez, Ana Cremades. NANO 2016. August 7-12, 2016. Québec, Canada.
59. **Nanocompositos metal/metal óxido como fotocatalizadores para degradación de moléculas orgánicas**. - Invited talk, presented at Nanotechnology Congress, Ministry of Education, June 10-11, 2016. San Salvador, El Salvador.
60. **Diseño de nanoestructuras plasmonicas para fabricación de biosensores**. - Invited talk, presented at Nanotechnology Congress, Ministry of Education, June 10-11, 2016. San Salvador, El Salvador.
61. **Metal - metal oxide composites as photocatalysts for degradation of organic molecules**. - *Invited talk*, presented at CARIBMAT-16, October 8-11, 2016. Santo Domingo, República Dominicana.
62. **Fabrication of Plasmon based molecular sensors**. - Invited talk, presented at *XXVI International Materials Research Congress*", August 20-25, 2017. Cancun, Mexico.
63. **Plasmonic nanostructures for biological and biomedical applications**. - Plenary talk at XV Congreso Nacional de Ciencias Químico Biológicas UDLAP 2017, March 22-24, 2017. Puebla, México.
64. **Controlling Near-electric field in Core-shell Plasmonic structures for SERS applications**. - Invited talk, José Luis Montaño Priede, J. Villanueva-Cab, **U. Pal,** presented at CARIBMAT-18, February 6-9, 2018. Cartagena de Indias, Colombia.
65. **Gold microtubes grown over fungi cell walls and their molecular sensing**. - Invited Talk, presented at 2nd International Conference and Exhibition on Nanotechnology, November 19-21, 2018. San Diego, California, USA.
66. **Plasmonic Nanostructures and current challenges in their application specific fabrication**. - Plenary lecture at DNANO, LXI Congreso Nacional de Física, October 7-12, 2018. Puebla, México.
67. **Design and fabrication of plasmonic nanostructures for energy, ambiental and biomedical applications**. – Invited talk at Instituto de Energia Renovable, November 6, 2018. UNAM, Cuernavaca, México.
68. **Plasmonic nanoparticle decorated ZnO nanostructures and their enhanced photocatalytic performance for organic dye-degradation**. - Invited-talk, presented at International Conference on Photocatalysis and Photoenergy (ICoPP) 2019, May 22-25, 2019. Incheon, Republic of Korea.
69. **Inhibiting photo-corrosion of ZnO nanostructured photoanode by Au nanoparticle decoration for water oxidation**. - **Umapada Pal**, Amol Uttam Pawar, Young Soo Kang, presented at ChinaNano 2019, August 17-19, 2019. Beijing, China.
70. **Enhancing CO_2 capture capacity of Polytriazine nanosheets by metal ion coordination**. - Invited-talk, **Umapada Pal**, Amol Uttam Pawar, Yong Soo Kang, Webinar on Nanotechnology iNano 2020, June 15-17, 2020.
71. **Performance of metal-supported metal oxide as combustion catalysts**. – Talk at "4th Euro-Mediterian Conference for Environmental Integration", November 1-4, 2022. Sousse, Tunisia.
72. **Electric dipole formation and its role on the performance of metal-supported composite catalysts.** – Invited Talk in "6th International Conference on Green Composite Materials and Nanotechnology" June 24-26, 2022. Chengdou, China.

73. **Designing plasmonic nanostructures for molecular sensing and potochromatic smart windows.** - Invited talk, in "XV-International Conference in Materials, Surfaces and Vacuum, September 26-29, 2022. Puerto Vallarta, Mexico.
74. **Graphene oxide grafted nickel ferrite nanoparticles as magneticsally separable adsorbemt for Cr(III) ion removal from contaminated water.** - Invited talk at Nanotechnology Week, 2023, October 16, 2023. University of Sonora, Sonora, México.
75. **Plasmon-based Superluminiscent core-shell nanophosphors: Synthesis and Application in Photochromic Windows.** - Talk at CARIBMAT 2023, October 18-21, 2023. San Juan de Puerto Rico, Puerto Rico, USA.
76. **Developing interface-tuned heterostructures at nanoscale for catalytic and photocatalytic applications.** - Keynote Lecture, "4th Global Conference & Expo on Nanoscience and Nanotechnology (ISTNANO 2023)", June 23-24, 2023. Dubai, UAE.

COURSES IMPERTED: 36 (several times each)

Nanoscience and nanotechnology-II: Bachelor (Applied Physics) FCFM, BUAP, Mexico (2021).
Nanoscience and nanotechnology-I: Bachelor (Applied Physics) FCFM, BUAP, Mexico (2020).
Materials Science: Bachelor (Electronic Science), FCE, BUAP, Mexico (2008, 2010).
Semiconductor Physics: Bachelor (Electronic Science), FCE, BUAP, Mexico (2007).
General Physics with Laboratory: Bachelor (Engineering), Engineering Faculty, BUAP, Mexico (2011).
Nanostructures: Master (Optative; Materials Science), IFUAP, BUAP, Mexico (1998, 1999, 2002, 2004, 2005, 2006, 2007, 2008, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2020).
Materials research laboratory: Master (Materials science), IFUAP, BUAP, Mexico (1998, 1999, 2000, 2001, 2004, 2006, 2010, and 2011).
Methods of Materials Preparation: Master (Materials Science), IFUAP, BUAP, Mexico (1998, 2001, 2005, 2006, 2007, 2008).
Raman Spectroscopy: Doctoral (Optative; Semoconductor Devices), CIDS, BUAP, Mexico (2011).
Molecular Physics: Bachelor (Electronic Science), FCE, BUAP, Mexico (2006).
Electromagnetic theory: Bachelor (Electronic Science), FCE, BUAP, Mexico (2004).
Thermal Physics: Preparatory course for Master students (Materials Science), IFUAP, BUAP, Mexico (2000).
General Chemistry: Preparatory course for Master students (Materials Science), IFUAP, BUAP, Mexico (2010).
General Physics: Preparatory course for Master students (Materials Science), IFUAP, BUAP, Mexico (2020).
Surface Analysis Techniques: Maester (Optative; Materials Science), IFUAP, BUAP, Mexico (2000).
Electricity and Magnetism: Bachelor (Electronic Science), FCE. BUAP, Mexico (2001, 2003, 2005).
Kinetics and thermodynamics of Materials: Master (Materials Science), IFUAP, BUAP, Mexico (1999, 2003).
Preparation and characterization of Nanocomposites: Master (Materials Science), IFUAP, BUAP, Mexico (1999).
Physics and Chemistry of Surfaces: Doctoral (Materials Science), IFUAP, BUAP, Mexico (1998).

Optical and Magnetic characterization of Materials: Master (Materials Science), IFUAP, BUAP, Mexico (1997).
General Examination preparation seminar: Doctoral (Materials Science), IFUAP, BUAP, Mexico (2012, 2013, 2014).
Thesis Seminar I: Doctoral (Materials Science), IFUAP, BUAP, Mexico (2014, 2015).
Thesis Seminar II: Doctoral (Materials Science), IFUAP, BUAP, Mexico (2015, 2016).
Physics of Semiconductors: Bachelor (Electronic Science), FCE, BUAP, Mexico (2007).
Thin Film Phenomena I: Doctoral (Materials Science), IFUAP, BUAP, Mexico (1996).
Thin Film Phenomena II: Doctora (Materials Science), IFUAP, BUAP, Mexico (1997).
Semiconductors: Doctoral (Materials Science), IFUAP, BUAP, México (1996).
X-ray and General Physics: Master (Physics), Vidyasagar University, Midnapore, India (1991-1992).
Solid State Physics: Special paper (Masters in Physics), Vidyasagar University, Midnapore, India (1990-1991, 1991-1992).
Nuclear Physics: Two-body and many-body Problems: Master (Physics), Vidyasagar University, Midnapore, India (1991).
Materials characterization techniques II: Master's degree (Material Science), IFUAP, BUAP, Mexico (2022).
Advanced physics laboratory: Master's degree (Physics), IFUAP, BUAP, Mexico (2018).
Laboratory project II: B.Sc. (Electronics Science), Faculty of Electronics Science FCE, BUAP, Mexico (2011, 2012, 2013, 2015).
Physics: Licenciatura (Biotechnology), Biological Sciences FCB, BUAP, Mexico (2021).
Thermodynamics: B.Sc. (Engineering), Faculty of Electronic Sciences FCE, BUAP, Mexico (2014, 2015).
Selected Topics in Physics: Bachelor's Degree (Engineering), Faculty of Electronic Sciences FCE BUAP, Mexico (2014).

Organization of scientific events:

International advisory committee member of the symposium "*Solar Energy Materials and Solar Cells*" in the "***International Materials Research Congress, 2003"***, August 17-21, 2003. Cancun, Mexico.
Organizer (Co-chairman) of the session "*Progress on Composite Materials*, in the ***International Materials Research Congress***, 2003", August 17-21, 2003. Cancun, Mexico.
Organizing committee member of the "*International Workshop on the Present Status of Hydrogen*", celebrated in Instituto Mexicano de Petroleo, August 21-22, 2003. Mexico City, Mexico.
International advisory committee member of the "*Solar Hydrogen Fuel cell-8*" (Symposium 2) of the "***International Materials Research Congress 2004",*** August 22-26, 2004. Cancun. Mexico.
International advisory committee member of the "*Solar Hydrogen Fuel cell-8*" (Symposium 2) of the "***International Materials Research Congress 2005",*** August 20-25, 2005. Cancun. Mexico.
Organizing Commettee member of *"ASTRA-Physics-2002"***,** Puerto Vallarta, Mexico.
Organizing Commettee member of the *"Topical Meeting on Nanostructured Materials and Nanotechnology* ***(Nanotech-2004)",*** Leon, Guanajuato, Mexico.

Organizing Committee membre of the **"***2nd Topical Meeting on Nanostructured Materials and Nanotechnology* ***(Nanotech-2005)",*** Ensenada BC., Mexico.
Organizer (Chairman) of the **"***Mexican Workshop on Nanostructured Materials"***,** 2-4 May, 2006, Institute of Physics, Autonomous University of Puebla, Puebla, Mexico.
Organizing committee member of "Escuela de Microscopia y Escuela Virtual de Microscopia en el Año Internacional de la Física" IFUNAM-IFUAP, August 2005. Puebla, México.
Organizing committee member of "Escuela de Microscopia y Escuela Virtual de Microscopia" IFUNAM-IFUAP, August 2006. Puebla, México.
Organizer (Chairman) of the **"***3rd International Topical Meeting on Nanostructured Materials and Nanotechnology* ***(Nanotech-2006)",*** September 24-28, 2006. Puebla, Mexico.
Organizer (Chairman) of the "*2nd Mexican Workshop on Nanostructured Materials"***,** May 15-18, 2007. Puebla, Mexico.
Organizing committee member of the "*Latinamerican Microscopy School*" IFUNAM, July 30-August 3, 2007. Mexico.
Organizer (Co-chairman) of the Symposium-19, "*Advanced Semiconducting Mterials*" in the the **International Materials Research Congress-2007**, October 28- November 1, 2007. Cancun, Mexico.
Organizing Committee member of the **"***4th International Topical Meeting on Nanostructured Materials and Nanotechnology* ***(Nanotech-2007)",*** November 12-14, 2007. Monterrey, Nuevo Leon, Mexico.
Organizing Committee member of the "*3rd Mexican Workshop on Nanostructured Materials***",** June 11-13, 2008. Mexico City, Mexico.
Organizing Committee member of the **"***5th International Topical Meeting on Nanostructured Materials and Nanotechnology* ***(Nanotech-2007)",*** 24-26 November 2008, Mexico City, Mexico.
Organizer (Co-Chairman) of the "*Symposium 19 (Advances in Semiconducting Materials), XVII IMRC* 2008", August 16-20, 2008. Cancun, Mexico.
Organizing Committee member of the **"***6th International Topical Meeting on Nanostructured Materials and Nanotechnology* ***(Nanotech-2009)"*****,** September 17-19, 2009. San Carlos, Nuevo Guaymas, Sonora, Mexico.
Organizing Committee member of the **"**7th International Topical Meeting on Nanostructured Materials and Nanotechnology **(Nanotech-2010)",** May 21-23, 2010. Chiapas, Mexico.
Organizer (Chairman) of the *4th Mexican Workshop on Nanostructured Materials*, 19-22 March, 2013. Puebla, Mexico.
Organizer (Chairman) of the 5th Mexican Workshop on Nanostructured Materieals, November 26-28, 2014. Instituto de Física, Benemérita Universidad Autónoma de Puebla, Puebla, Mexico.
Organizer (Chairman) of the *6th Mexican Workshop on Nanostructured Materials*, October 12-15, 2016. BUAP, Puebla, Mexico. (home page: http://www.ifuap.buap.mx/eventos/MWNM16/)
Scientific Committee member of CARBMAT 2016, November 08-11, 2016. Santo Domingo, República dominicana. (http://cultura.fis.ucm.es/caribmat/index.php/es/)
Organizing Committee Member of 2nd International Conference and Exhibition on Nanotechnology, November 19-21, 2018. San Diego, USA.
Scientific Committee member of CARBMAT 2023, October 18-21, 2023. Bayamón-San Juan, Puerto Rico, USA (http://thycobrae.fis.ucm.es/caribmat/index.php/es/).
Advisory Committee member, "International Conference on Device Intelligence, Computing and Communication Technologies (DICCT-2023)", Department of Electronics and Communication Engineering, Graphic Era (Deemed to be University), March 17-18, 2023. Dehradun, India.

Organizing Committee member of "4th Global Congress ans Expo on Nanoscience & Nanotechnology (ISTP Nano 2023)", June 23-24, 2023. Dubai (https://inovscitechconferences.com/dubainanoscitech/).
Advisory Committee member, "The 2nd International Conference on "Device Intelligence, Computing and Communication Technologies (DICCT-2024)" Graphic Era (Deemd to be University), March 15-16, 2024. Dheradoon, India (https://dicct.geu.ac.in/)

EDITORIAL:

- **Guest Editor** of the Mexican Journal of Physics (Revista Mexicana de Fisica, Mexican Physics Society) Vol. S 53, No. 5, 2007.
- **Guest Editor** of the Journal of Nanoscience and Nanotechnology (American Scientific Publishers) Vol. 8, No. 12, 2008.
- **Guest Editor** of the Journal of Nano Research, (Trans Tech Publication, Switzerland) Vol. 5, 2009.
- **Guest Editor** of the Journal of Nano Research, (Trans Tech Publication, Switzerland) Vol. 9, 2010.
- **Associate Editor** of the open access journal **IST transactions of Renewable and Sustainable Energy (RSE)**, IST Press, Hamilton, Ontario, Canada (since 2007).
- **Associate Editor** of the open access journal **International Scholarly Research Notices,** Hindwai (2012-2015)**.**
- **Associate Editor** of **Advances in Nano Research,** Techno Press, KIST, Seoul, Republic of Korea (since 2013).
- **Managing Editor** of **Materials Science Research India,** Allahabad, India (2017, 2018).
- **Editorial Board member** of International Journal of Photoenergy, Hindawi (since 2020).
- **Editorial Board member** of **Biomaterials and Biomechanics in Bioengineering**, Techno Press, Republic of Korea (Since 2020).
- **Editor-in-Chief**, **BME Horizon,** Global Science Pblishing, UK (since 2023)
- **Co-Editor-in-Chief**, Journal of Phase Chamge Materials, Calibria University, Italy (Since 2021).

Awards & Honors:

1. Catedra Patrimonial Level II (CONACYT, Mexico): 1995-1997.
2. Member of National Investigator System (SNI), Mexico: Level I (1997-2003).
3. Member of National Investigator System (SNI), Mexico: Level II (2004-2007).
4. Member of National Investigator System (SNI), Mexico: Level II (2008-2010).
5. Member of National Investigator System (SNI), Mexico: Level III (2011-2015).
6. Received **State Science and Technology Award**, State Council of Science and Technology (CECyT), Puebla, Mexico, October 2003.
7. Excellence in Computation Basic and Programming, IEEE, Kharagpur chapter, India, 1987.
8. Doctoral examination committee member, Bharathiar University, India (1998-till date).
9. Doctoral and master's examination committee member, UNAM, Mexico, (2002-till date).

10. Project evaluator of the National Science and Technology Council (CONACyT), Mexico (1998-till date).
11. Project evaluator of the National Council of Science and Technology (CONICyT), Argentina, 2007-2010.
12. Member of review committee of "State Science and Technology Award", Quintana Roo state, Mexico (2007).
13. Member of review committee of Scientific Projects, Universidad de Iberoamericana, Mexico, 2008.
14. Member of the Scientific Committee of NANOEULA (Nanotechnology Consortium between EU and Latin America).
15. **Special recognition** by the University of Sonora, for **Contribution in Nanoscience and Nanotechnology in Mexico**, at the Nanotech 2009.
16. **Brain Pool Fellow** of the Korean Ministry of Science and Technology, January 2009-December 2009.
17. **Brain Pool Fellow** of the Korean Ministry of Science and Technology, April 2019-March 2020.

18. **Reviewer of more than 80 International and National Journals:** *Superficies y Vacio* (since 1997); Revista Mexicana de Física (since 2000); ***Solar Energy Materials and Solar Cells*** (Elsevier, since 2000); *Optical Materials* (Elsevier, since 2000); *Journal of New Materials for Electrochemical Applications* (since 2001); *Materials Science and Engineering B* (Elsevier, since 2002); *Journal of Materials Science* (Springer, since 2008); *Materials Letters* (Elsevier, since 2010); ***International Journal of Hydrogen Energy*** (Elsevier, since 2002); *Applied Physics A:Materials Science & Engineering* (Springer, since 2004); ***Journal of Physical Chemistry B*** (ACS, since 2004); ***Journal of Physical Chemistry C*** (ACS, since 2007); ***Crystal Growth and Design*** (ACS, since 2005); *Applied Surface Science* (Elsevier, since 2005); *Materials Chemistry and Physics* (Elsevier, since 2005), ***Optics Communication*** (Elsevier, since 2006); *Journal of American Ceramic Society* (Am. Cer. Soc.; since 2006); *Journal of Crystal Growth* (Elsevier, since 2005); *Vacuum* (Elsevier, since 2005); *Journal of Physics and Chemistry* (since 2005); *J. Nanoscience and Nanotechnology* (ASP, since 2006); ***Nanotechnology*** (IOP, since 2007); *Mexican Journal of Physics* (SMF, since 2006), *Journal of Physics D* (IOP, since 2006), ***Langmuir*** (ACS, since 2007); *Physica E* (Elsevier, since 2007); ***Chemical Physics Letters*** (Elsevier, since 2007); *Semiconductor Science and Technology* (IOP, since 2007); *Current Applied Physics* (Elsevier, since 2007); *Nano Trends* (since 2008); Journal of Nano Materials (Hindwai, since 2009); Journal of Nano Research (TTP, since 2009); ***Journal of Applied Physics*** (AIP, since 2008); ***Applied Physics Letters*** (AIP, since 2009); *Applied Optics* (OSA, since 2009); *Asian Journal of Physics* (since 2009); ***ACS Nano*** (since 2009); *International Journal of Nanotechnology* (since 2009); ***J. Materials Chemistry*** (RSC, since 2008), ***Journal of Environmental Science*** (Elsevier, since 2010); ***Phys. Chem. Chem. Phys.*** (RSC, since 2010); ***Applied Catalysis A*** (since 2011); ***Applied Catalysis B*** (Elsevier, since 2013), ***Energy and Environmental Sci.*** (RSC, since 2011); ***Nanoscale*** (RSC, since 2011); ***RSC Advances*** (RSC,since 2012), ***Progress in Photovoltaics*** (Willey, since 2015) ***Optics Letters*** (since 2011), ***Optics Experess*** (since 2013), Journal of Electronic Matetials, (IEEE since 2014), ***J. Hazadrous Materials*** (Elsevier, since 2015), ***Nature Materials*** (since 2020), ***Nature Communications*** (2023), etc.
19. Listed in Marquis Who's Who in the World (since 2000); Member of Who´s Who Historical Society of Professionals (since 2004).

20. **Member of Mexican Surface Science and Vacuum Society**; Mexican Crystallography Society (founding member); Mexican Physics Society; Mexican Academy of Science; Mexican Academy of Materials; American Chemical Society; Founding member of section DNANO of the Mexican Physics Society.

Signature and date: Umapada Pal November, 2023.