

BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA



INSTITUTO DE FÍSICA
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SEMINARIO
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“Solar cell transitions: Towards thin film silicon-based technology”

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Solar photovoltaic systems (PVS) are becoming one of the important clean and alternative-energy technology in several countries. The PVS are safe, reliable with a low-maintenance cost without any on-site pollutant emissions. Nowadays, the utility grid-connected PVS are increasing rapidly in the world and the estimated global PV market grew to over 75 GW during 2016, and about 300 GW cumulatively installed capacity at the end of same year. The underlying deployment scenario assumes 3,150 GW of cumulative installed PV capacity by 2050. First of all, an explanation about the general photovoltaic development and situation in the world will be given in this presentation. Also, considerations as bulk and thin-film based technologies will be discussed and the possible scheme for solar cell energy conversion improvement by using silicon-based materials and technology are reviewed. Some of the obtained silicon-based thin-films are analyzed through its light interaction, mostly for the visible range and for down conversion approaches. Some of the sample properties as amorphous and microcrystalline-based materials as SiO_x, SiC_x and SiO_xC_y thin films fabricated by using Plasma- and catalytic chemical vapor deposition methods (Plasma- and Cat-CVD) are discussed.

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