



BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA
INSTITUTO DE FÍSICA “Ing. Luis Rivera Terrazas”



SEMINARIO EXTRAORDINARIO

“Jesús Reyes Corona”

“Ultrastable Metal Polyhydrides Below 60 GPa”

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RESUMEN: I will review a decade of experimental research showing that under pressure near 1-2 Mbar, elements form extraordinary polyhydrides—such as CsH₇ (1), RbH₉ (1), YH₆ (2), CeH₁₀ (3), BaH₁₂ (4), and even La(Sc)H₁₂ (5, 6)—with far more hydrogen atoms per metal atom than previously imagined. I will show the latest results of attempts to reproduce room temperature superconductivity in the La-Sc-H system, and the recent achievement of T_c around 174 K below 100 GPa in the Th-H system. Moreover, by introducing Th into the La-H system, an even higher T_c of up to 232 K can be achieved at the same pressure of about 100 GPa. I will pay special attention to Th-containing Ce-Th-H metallic ternary polyhydrides (XH₁₀, XH₇, cF80-XH₆+x, A15 X₄H₂₃), which exhibit extraordinary stability down to 12 GPa and can be synthesized and characterized without damaging diamond anvils below 65 GPa. The recent trend of decreasing stabilization pressures for hydrogen-rich materials and superconductors (7) opens a realistic pathway toward their application, promising a transformative leap in hydrogen storage technology.

Auditorio del Instituto

Lunes 12 de octubre de 2026, 13:00 hrs