Séminaire présenté par Jing Wen

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Salle 4-014, IJL

Hydrogen-driven microstructural engineering in titanium alloys for structural performance and in Mg-Ni-based alloys for hydrogen storage

Hydrogen-metal interactions have attracted significant attention due to their importance in modern industrial applications. Among the various phenomena involved, hydrogen embrittlement and hydrogen storage stand out because of their high technological interest. When hydrogen enters a metal, it can stabilize or promote the formation of new phases that would not normally form under standard conditions. These hydrogen-induced phases, such as metal hydrides or transformed crystal structures, are usually harder and more brittle than the original material. Consequently, the material becomes more susceptible to crack initiation and propagation. In this seminar, I will first present my research findings on hydrogen-induced phase transformation, microstructural modifications, and their combined effects on the plastic deformation behaviour in titanium and some of its alloys, aiming to better understand hydrogen-metal interactions at a microstructural scale. Then I will switch my topic to design and synthesis Mg-Ni composites for large-scale solid-state hydrogen storage, particularly the in-situ neutron diffraction and kinetic modelling of the fundamental mechanisms of hydrogen (deuterium) uptake and release in forged Mg-Mg_2Ni composites.

Séminaire organisé par le département SI2M