Microstructural Aspects of the Mechanical Performance of Mg-LPSO Alloys

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ABSTRACT

A rare combination of advanced in-situ techniques with different spatio-temporal resolutions, including synchrotron diffraction and acoustic emission (AE) measurements, has been used to reveal fine microstructural details of the underlying deformation mechanisms during loading of Mg-Y-Zn alloys. In particular, the role of the arrangement of the solute-rich stacking faults forming cluster arranged layers (CALs) and nanoplates (CANaPs) or the complete long period stacking ordered (LPSO) phase in hardening has been investigated in detail. The applicability, advantages and disadvantages of different in-situ techniques to study the deformation mechanisms in Mg-LPSO alloys are discussed.

BIOGRAPHY

Prof. Dr. Kristián Máthis is an expert in the experimental study of mechanical properties of materials, with a focus on magnesium alloys. During the last decade, he has focused on the development and application of in-situ methods. He uses a combination of experimental techniques, including acoustic emission, diffraction methods and high-speed camera technology, to provide exceptional spatiotemporal resolution data on the active deformation mechanisms.

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