ESAFORM Webinar Series 2024

Material Testing 2.0 for anisotropic plasticity

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Registration link, in advance for this meeting:
https://videoconf-colibri.zoom.us/meeting/register/tJwtcOqtpzgrHtNMU25GA5QYR1KHfTDb3I1L

Abstract

Camera-based deformation measurements, like Digital Image Correlation (DIC) and inverse identification techniques like finite-element model updating (FELU) or the Virtual Fields Method (VFM) are now mature technologies. The challenge ahead of us is to combine these technologies in our engineering processes to benefit from the multiple advantages they offer like the possibility to reduce the number of material tests and provide a more robust calibration of models. The shift from simple tests like uniaxial tension or bending to more heterogeneous tests using DIC and FEMU/VFM has been coined Material Testing 2.0 (MT2.0). The presentation will provide an overview of the state of the art of MT2.0 for anisotropic plasticity, with a particular focus on the use of the VFM. Advantages and limitations will be highlighted, and an outlook of future work will be provided, with a particular focus on test design.

Biography

After a long career in academia in France and in the UK, Fabrice Pierron is now R&D Director at MatchID, a Belgian company developing and commercializing a Digital Image Correlation (DIC) platform integrating measurements with postprocessing like material identification and model validation. Fabrice is recognized worldwide for his contribution to the design of novel test methodologies based on full-field measurements and inverse identification, a new paradigm that he christened 'Material Testing 2.0'. He has published more than 150 journal papers and the impact of his research is recognized by an h-index of 52. He has been Editor-in-Chief of the journal 'Strain' for ten years and is a Fellow of the Society for Experimental Mechanics (SEM).