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Modelling Deformation and Texture Evolution in OFHC Copper at Large Strain and High Strain Rate NICOLA BONORA, GABRIEL TESTA, ANDREW RUGGIERO, University of Cassino and Southern Lazio, GIANLUCA IANNITTI, TECHDYN Engineering, MAGNUS HÖRNQVIST, NOOSHIN MORTAZAVI, Chalmers University of Technology — In this work, a two-scale approach to simulate high rate deformation and texture evolution in OFHC copper is presented. The modified Rusinek-Klepaczko material model was used to simulate the response of the material at continuum scale accounting for different deformation mechanisms occurring over an extensive range of strain rate and temperature. Material model parameters were determined from characterization test (mainly uniaxial tests) results. Successively, the model was validated simulating material deformation in Taylor anvil impact, symmetric Taylor impact (rod-on-rod) and dynamic tensile extrusion (DTE) tests. Texture evolution, under different deformation paths was simulated using the crystal plasticity package CPFEM and results were compared with those obtained by EBSD analysis. The possibility to incorporate the effect of grain size evolution and fragmentation at continuum scale is discussed.

Nicola Bonora
University of Cassino and Southern Lazio

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