
MM 46: Invited Talk (Hauptvortrag): Roberts

Time: Wednesday 18:00–18:30

Location: H24

Invited Talk MM 46.1 Wed 18:00 H24
Brittle-ductile transitions - cracks and dislocations — ●STEVE
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The interactions between loaded crack tips and dislocations are fundamental in controlling fracture behaviour and the ductile-brittle transition in simple (and some more complex) metals, ceramics and semiconductors. Crack tips emit shielding dislocations, and can attract antishielding dislocations. These dislocations can substantially mod-

ify the crack tip stress field, leading to changes in fracture behaviour that vary with temperature via changes in dislocation nucleation and mobility. There is now a considerable body of work, both experimental and modelling, addressing these phenomena; and their combination has led to a much better understanding of the basic processes. The talk will review approaches and research in this area, and consider the new challenges and possibilities that are arising as test methods move to smaller scales and as modelling methods increase in capability, so that their usable length and time scales are now converging.