



School of Civil Engineering

High Performance Computing Laboratory

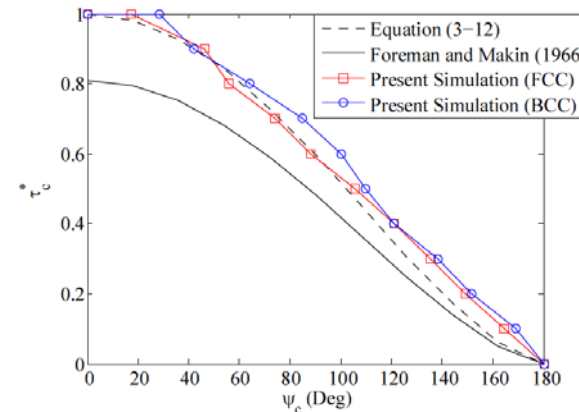
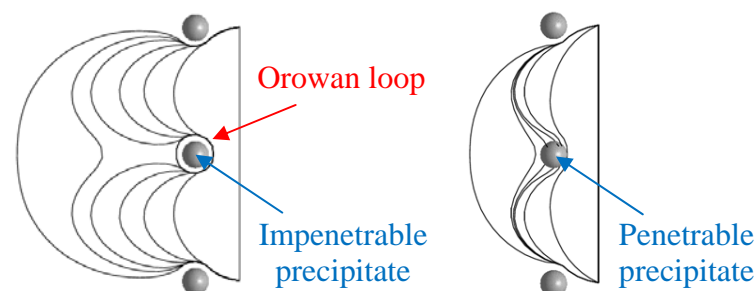
“Multiscale Modeling of Fracture and Plasticity”

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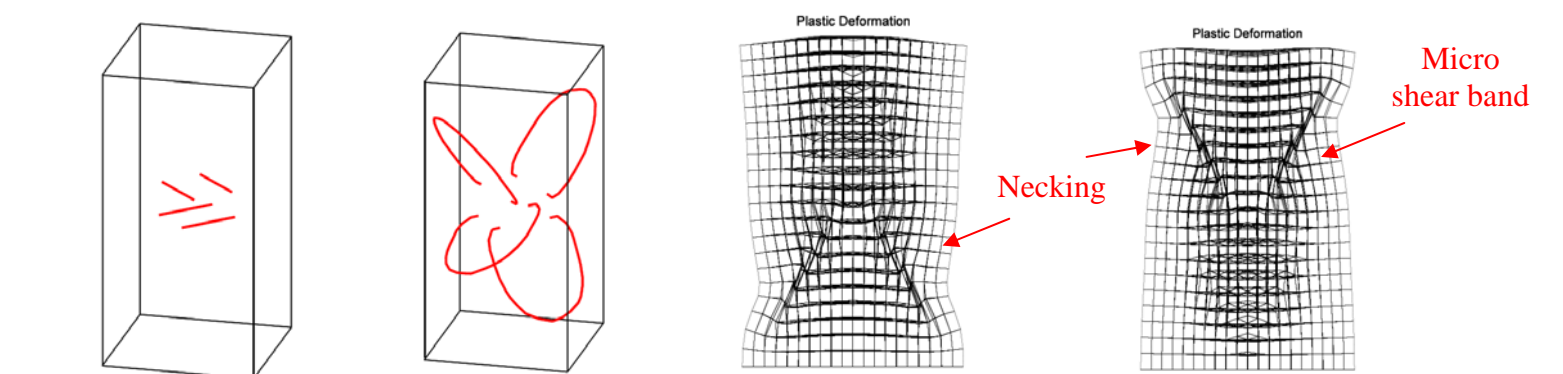


Dislocation-Precipitate Interaction



Critical stress (CRSS) vs. bypass angle

Multiscale Modeling of Plasticity in Micro-Wire Under Axial Tension

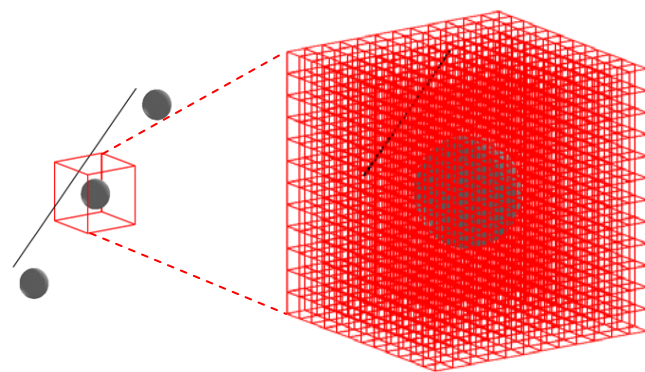


Initial edge dislocations

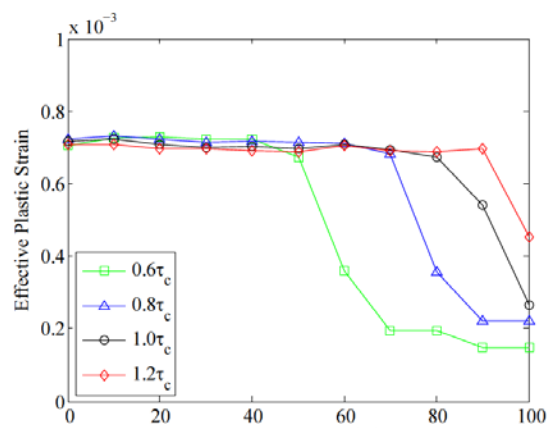
After deformation

Plastic deformation

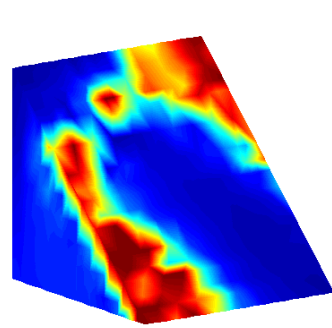
Effect of Precipitate Resistance on Effective Plastic Strain



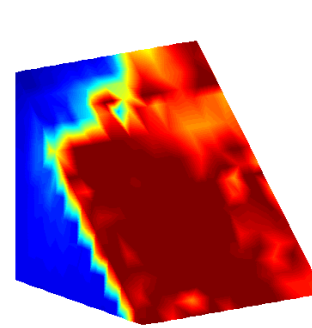
Define a process domain around precipitate



Effective plastic strain vs. precipitate resistance ratio

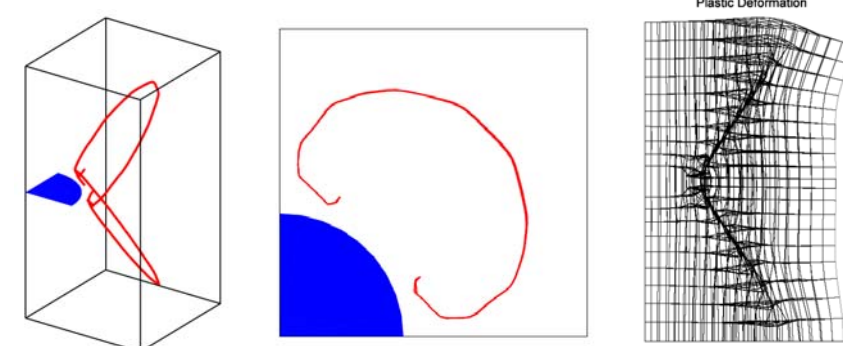


Effective plastic strain around an impenetrable precipitate

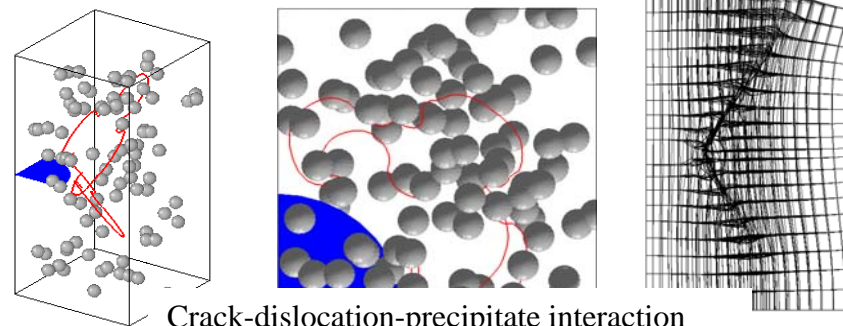


Effective plastic strain around a penetrable precipitate

3D Crack-Dislocation-Precipitate Interaction



Crack-dislocation interaction



Crack-dislocation-precipitate interaction

