1. Record Nr. UNINA9910346700403321

Autore	Chen Zhiming
Titolo	Modelling the plastic deformation of iron
Pubbl/distr/stampa	KIT Scientific Publishing, 2013
ISBN	1000032216
Descrizione fisica	1 electronic resource (XII, 146 p. p.)
Collana	Schriftenreihe des Instituts für Angewandte Materialien, Karlsruher Institut für Technologie
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	The 1/2<111> screw dislocations in bcc iron are studied by atomistic simulations. An analytical yield criterion captures correctly the non-Schmid plastic behavior. A model Peierls potential develops a link between the atomistic modeling at 0 K and the thermally activated dislocation motion. All predicted features agree well with experimental observations. This work establishes a consistent bottom-up model that provides an insight into the microscopic origins of the plastic behavior of bcc iron.