

Tokumoto Lab.

[Lattice defects and related nanostructures]

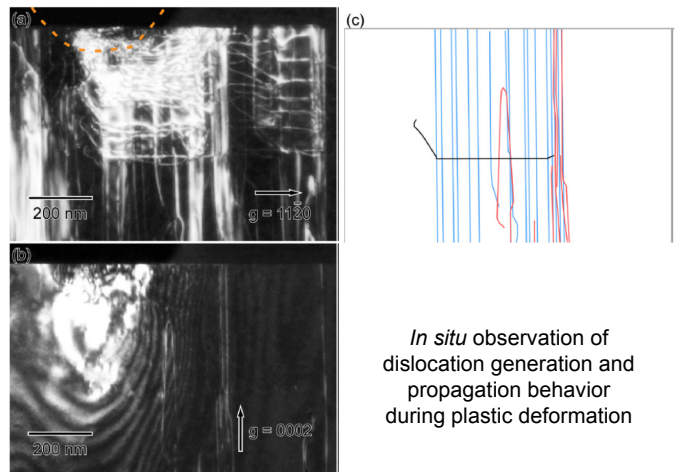
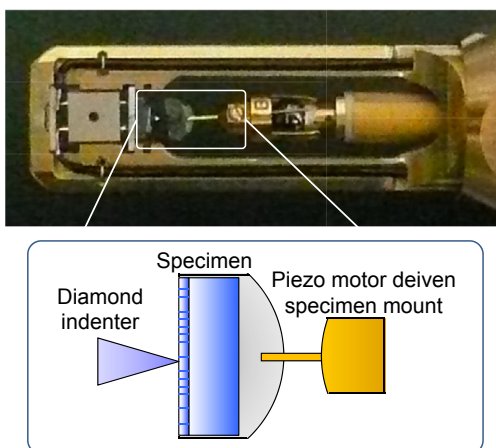
Department of Materials and Environmental Science

Nanostructure Materials Science

Department of Materials Engineering, School of Engineering

Dynamic properties of dislocations

We investigate dislocation generation and propagation processes by *in situ* observation of nanoscale plastic deformation in a transmission electron microscopy (TEM). By combining *ex situ* measurements of mechanical properties and *in situ* observations of dislocation dynamics, we are trying to link the macroscopic mechanical properties and nanoscopic dislocation dynamics.

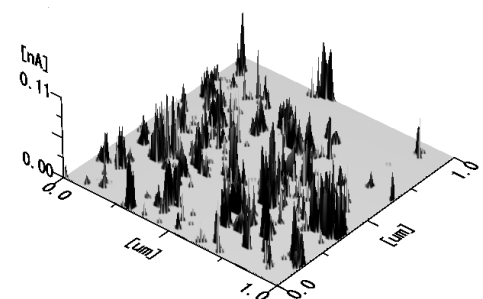
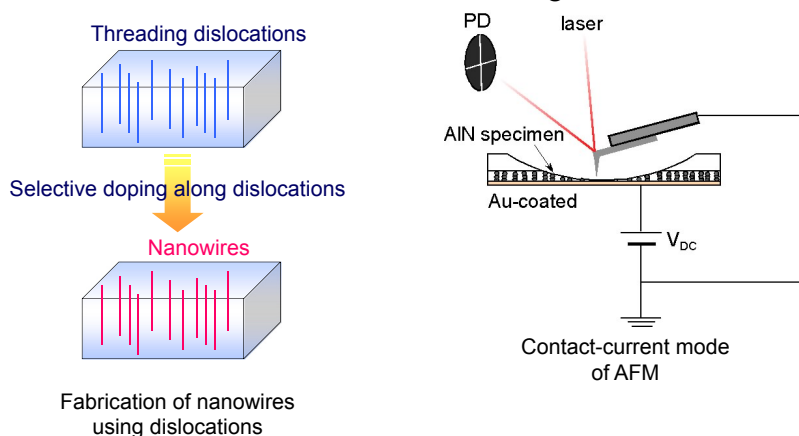


In situ observation of dislocation generation and propagation behavior during plastic deformation

Y. Tokumoto *et al.*, *J. Appl. Phys.*, **112** (2012) 093526 1-6.

Electrical properties of dislocations

We fabricated nanowires in semiconductors by selective doping along dislocations. Atomic force microscopy (AFM) measurements under contact-current mode detected the local electrical conduction along dislocations.



Fabrication of electrically conductive nanowires

Y. Tokumoto *et al.*, *J. Appl. Phys.*, **106** (2009) 124307 1-4.

S. Amma *et al.*, *Appl. Phys. Lett.*, **96** (2010) 193109 1-3.