

TOKUMOTO LAB.

[Physical properties of dislocations]

Department of Materials and Environmental Science

<http://www.tokumoto.iis.u-tokyo.ac.jp>

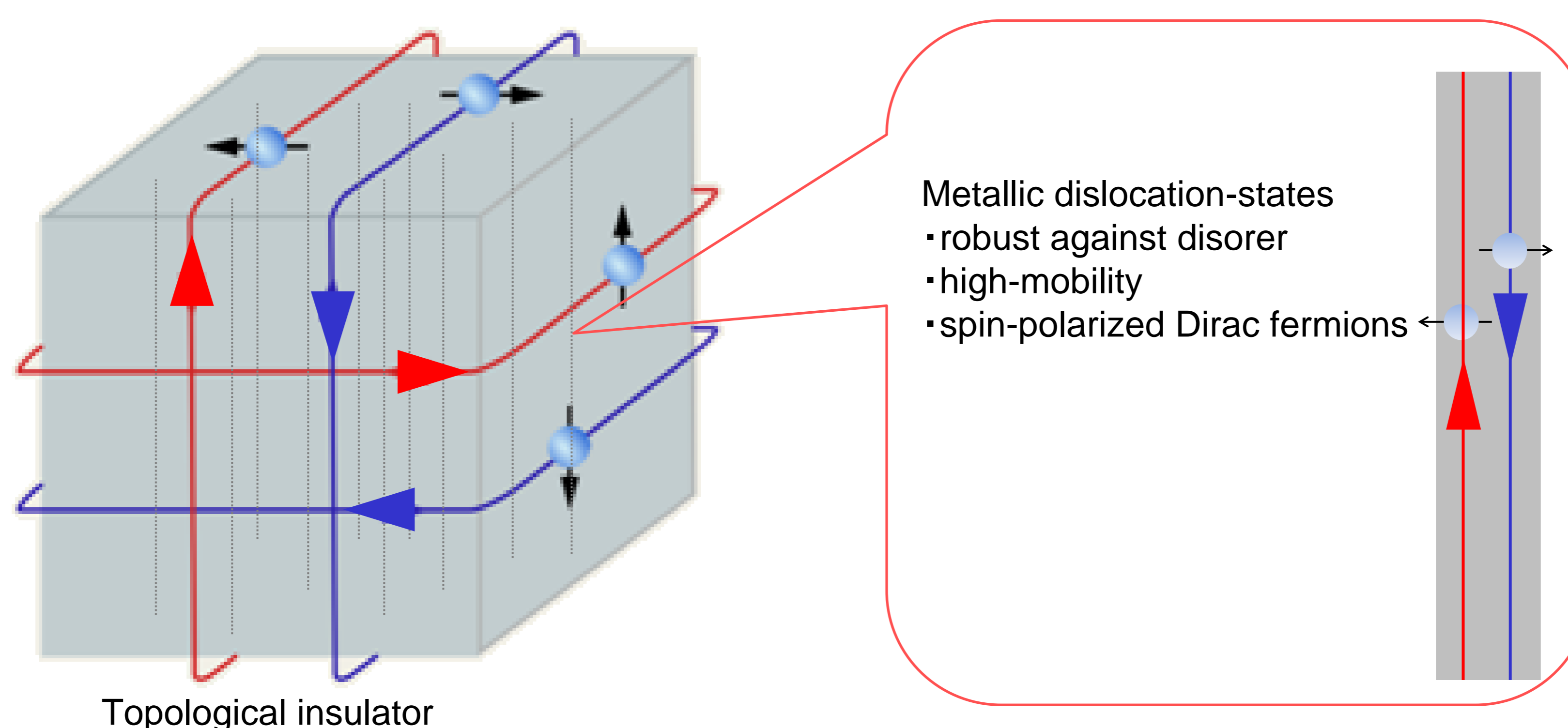
Nanostructure Materials Science

Department of Materials Engineering

Electrical properties of dislocations

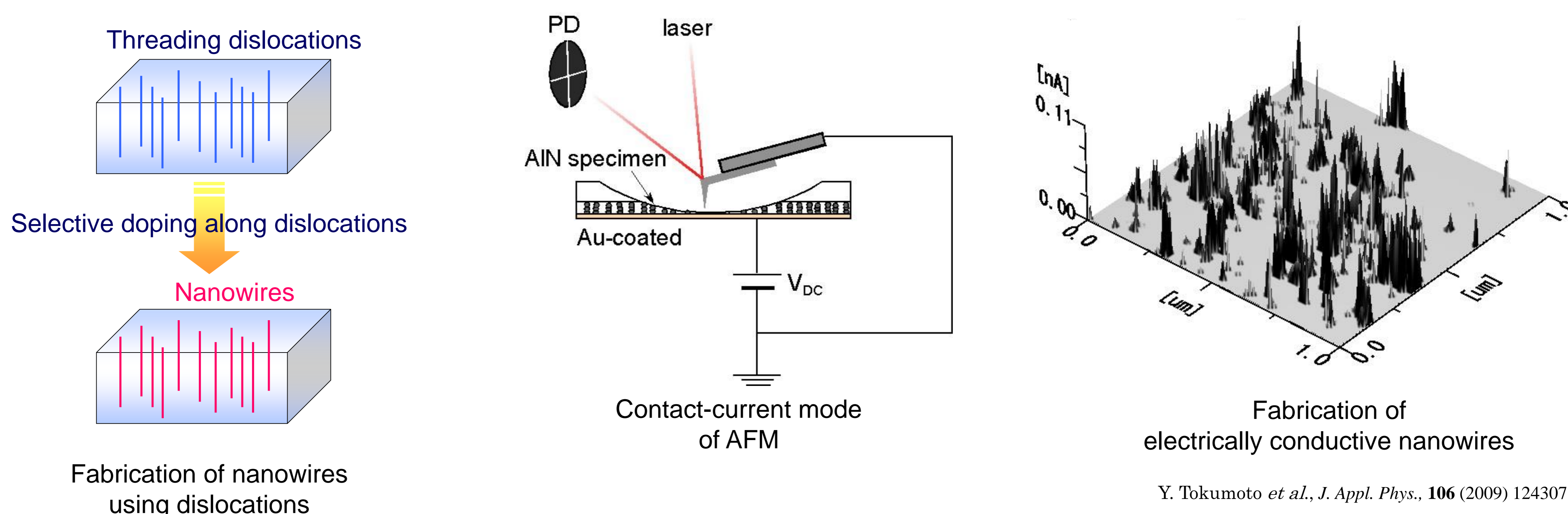
◆ Dislocations in topological insulators

Topological insulators are quantum materials that have a bulk band gap as an ordinary insulator but have protected metallic conducting states on their edge/surface. Recently, it has been theoretically predicted that the metallic states also occur along dislocations in topological insulators. We are trying to reveal the metallic states of dislocations in topological insulators by microscopic evaluation of electrical properties.



◆ Dislocations in semiconductors

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.



Y. Tokumoto *et al.*, *J. Appl. Phys.*, **106** (2009) 124307 1-4.
S. Amma *et al.*, *Appl. Phys. Lett.*, **96** (2010) 193109 1-3.