

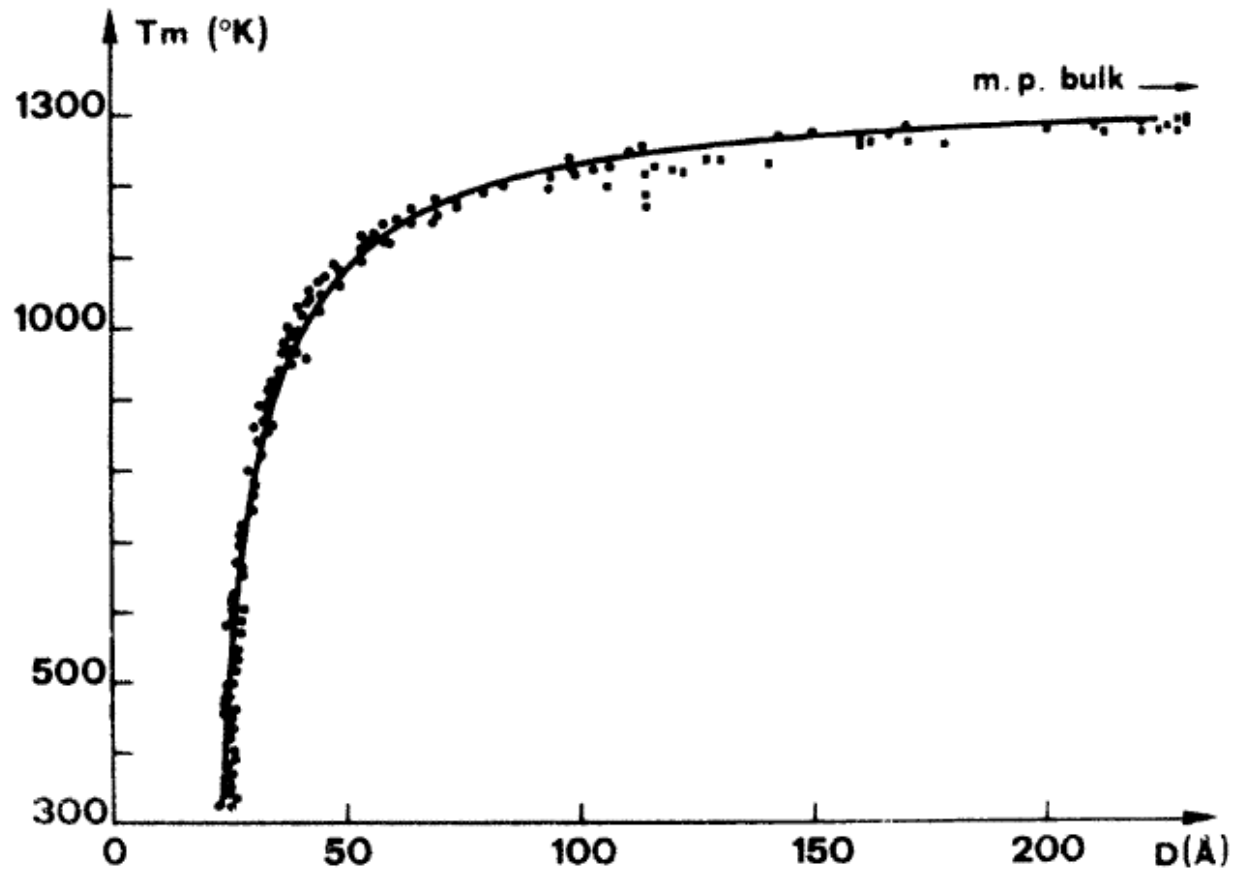


Richard Feynman
Nobel Prize in Physics (1965)

“There’s plenty of room at the
bottom!”

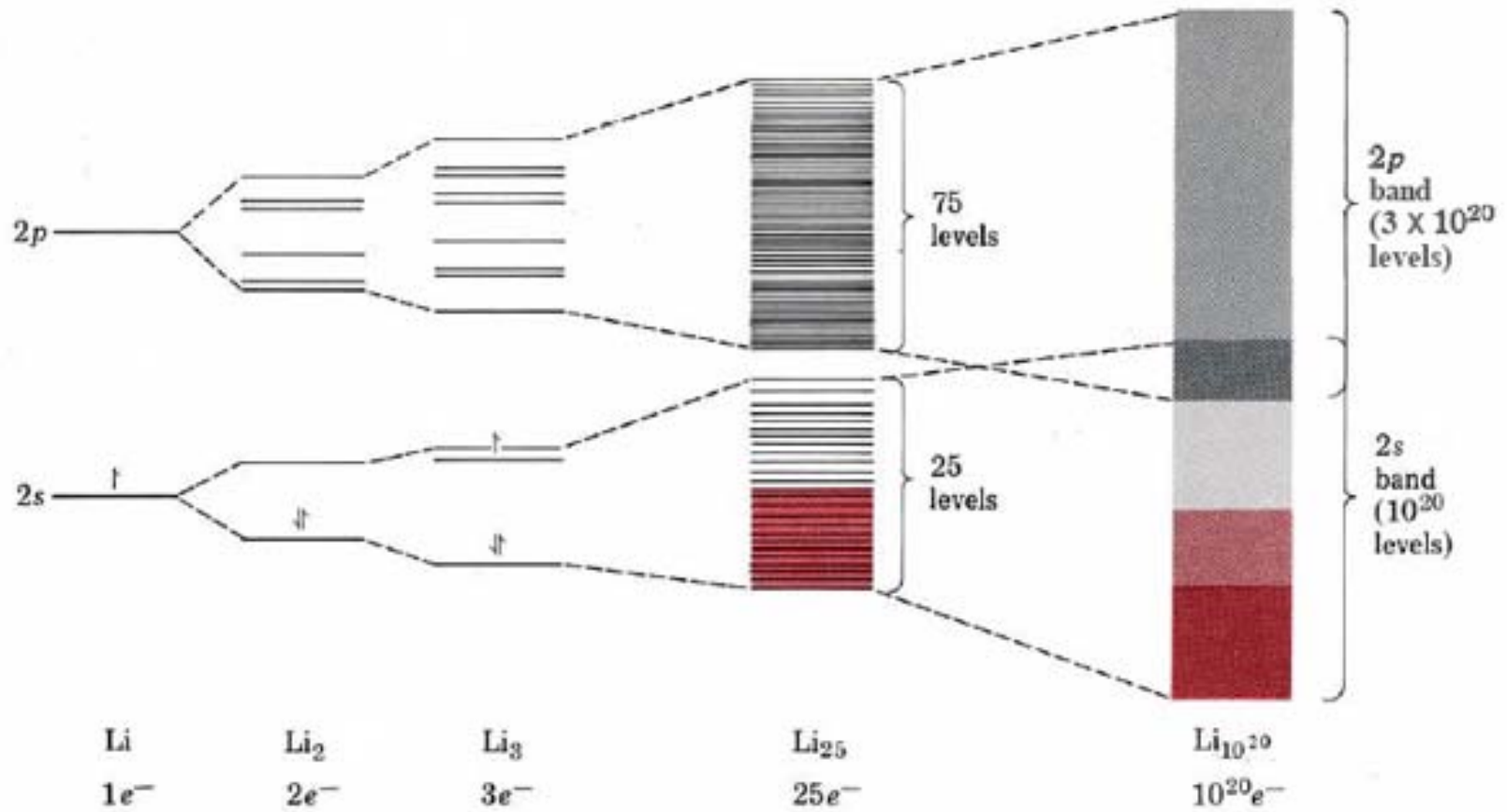
Why should things be different at the
nanoscale?

Effect of size on thermodynamics at the nanoscale: melting temperature of gold nanoparticles



Ph. Buffat et al., Phys. Rev. A 13, 2287 (1976).

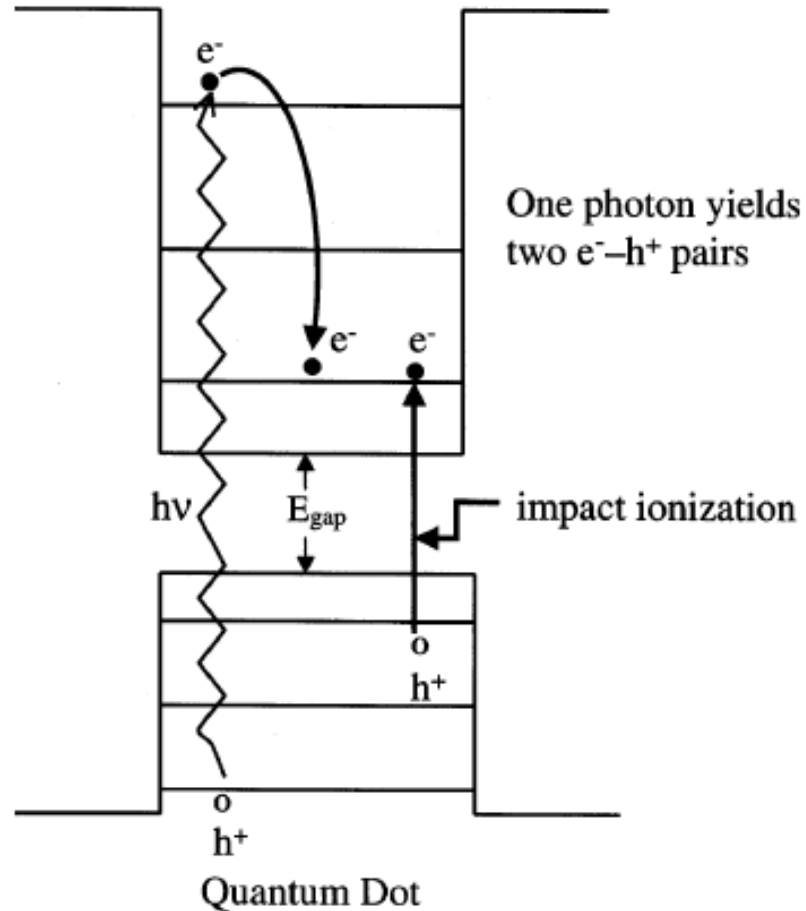
Quantum Dots



Quantum Dots



Multiple Carrier Generation in Quantum Dots: Potential Photovoltaic Materials



A. J. Nozik, Physica E 14, 115 (2002).

What about your silver nanoprisms?

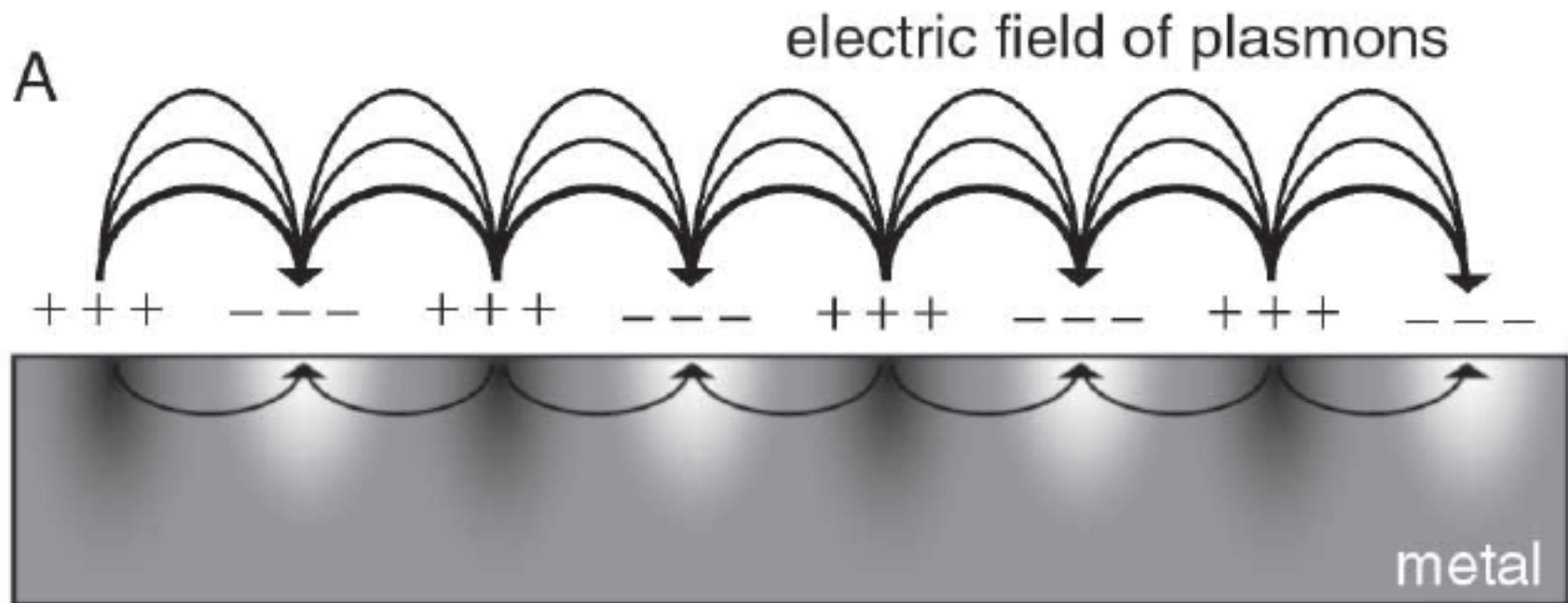


A. J. Frank et al., J. Chem. Ed. 87, 1098 (2010).

Why are metals shiny and reflective?

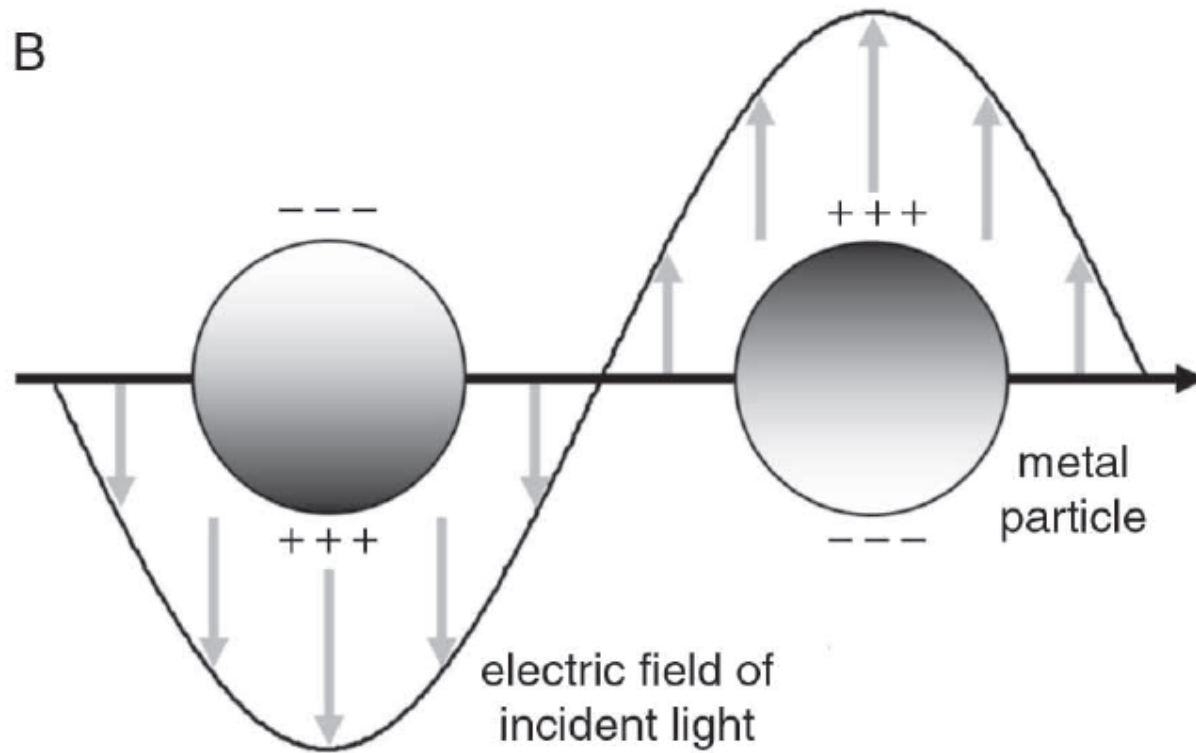
Why do some metals appear slightly
different in color?

Surface Plasmon Resonance



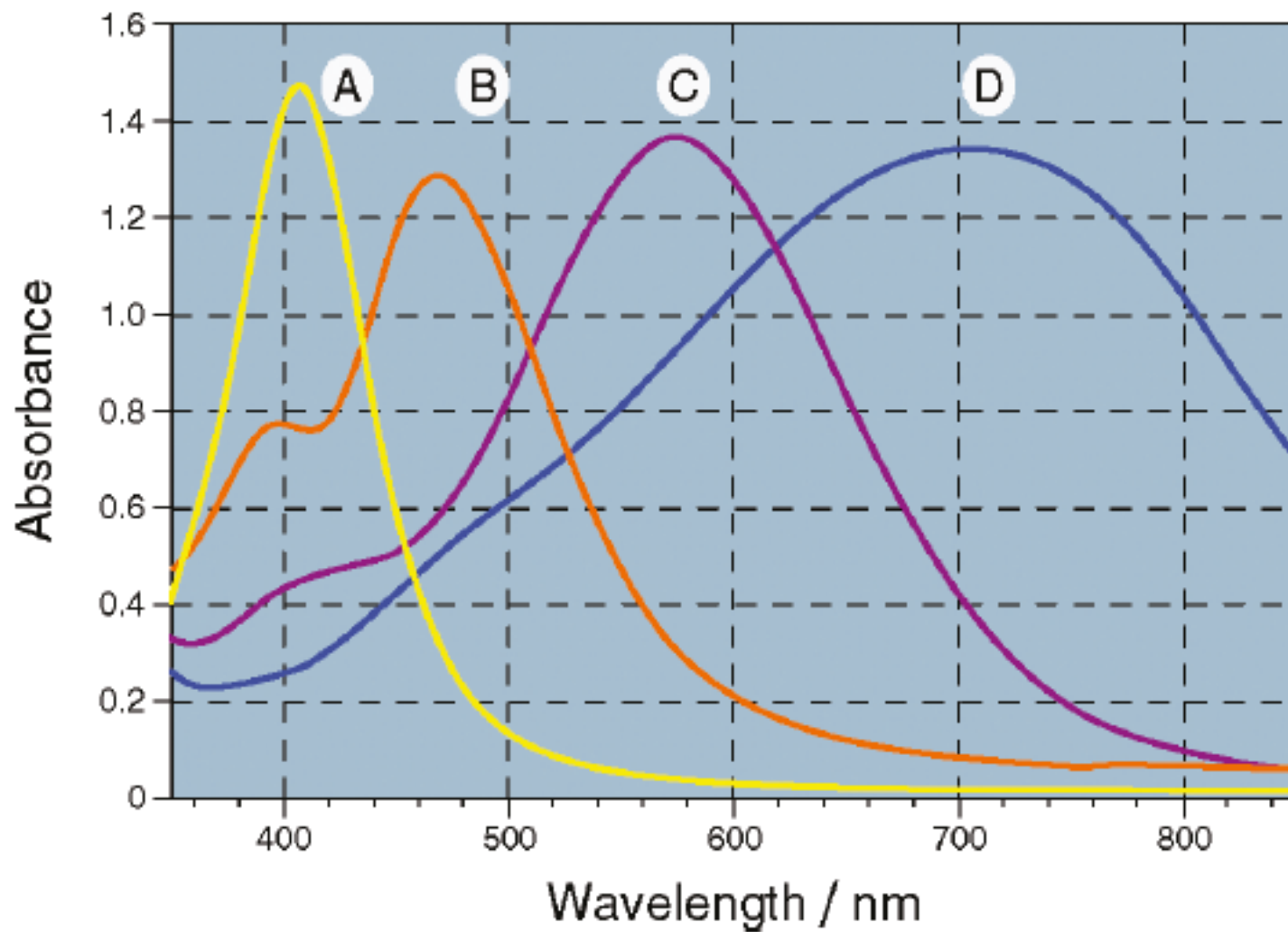
D. J. Campbell et al., J. Chem. Ed. 84, 91 (2007).

Surface Plasmon Resonance



D. J. Campbell et al., J. Chem. Ed. 84, 91 (2007).

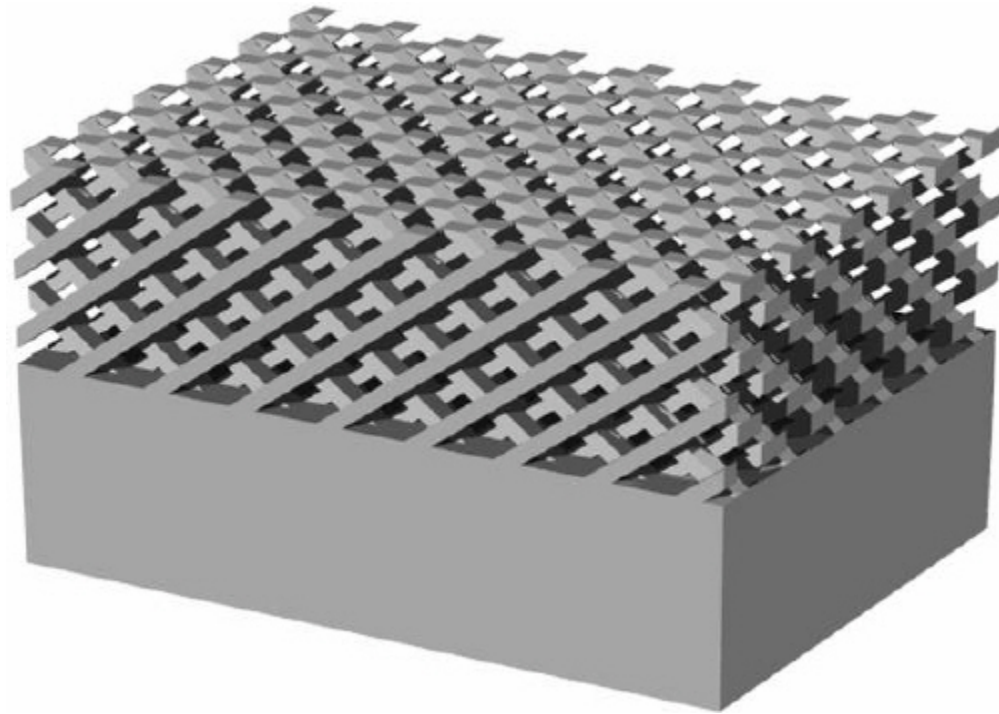
Plasmon Resonance



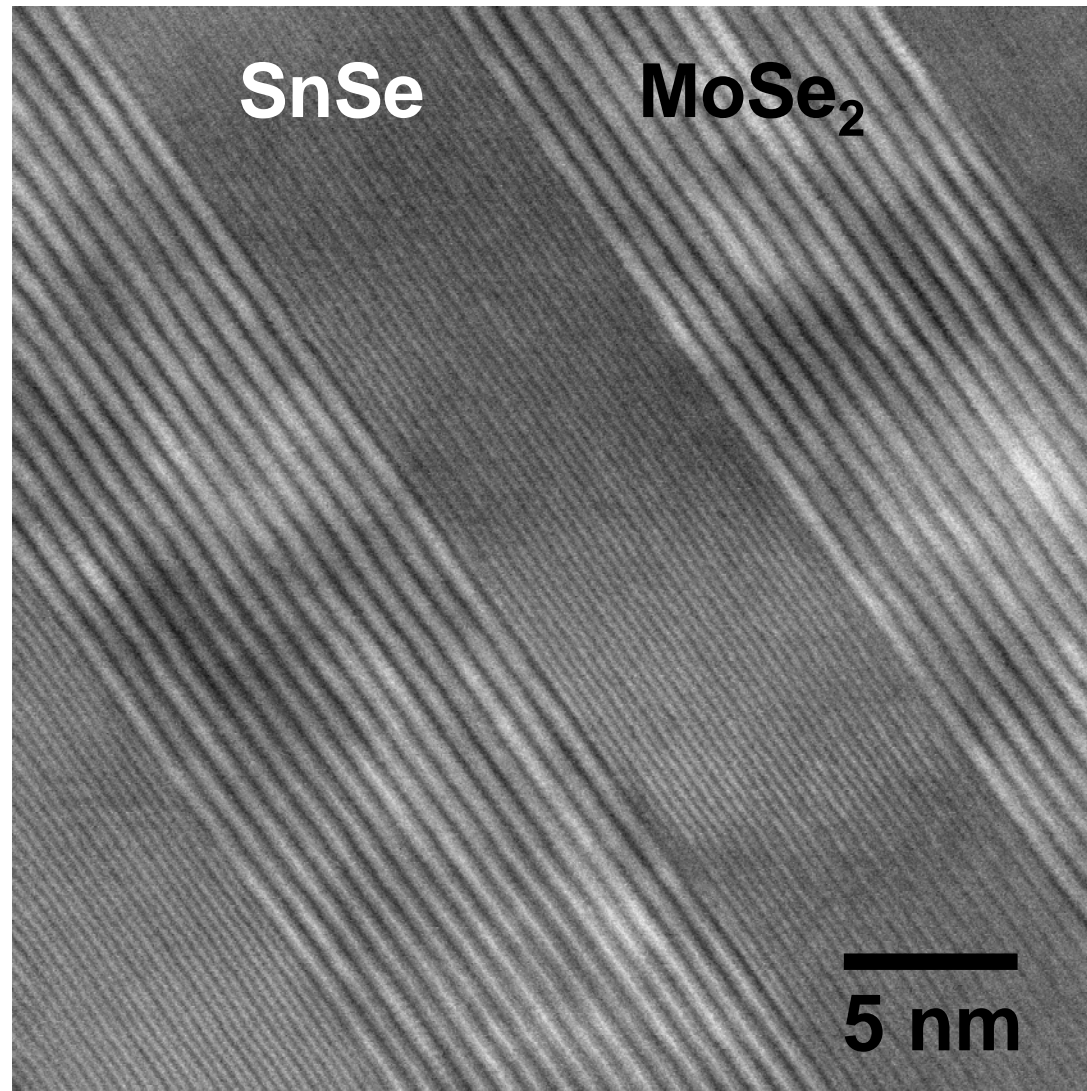
A. J. Frank et al., J. Chem. Ed. 87, 1098 (2010).

What is it good for?

Photonic crystals

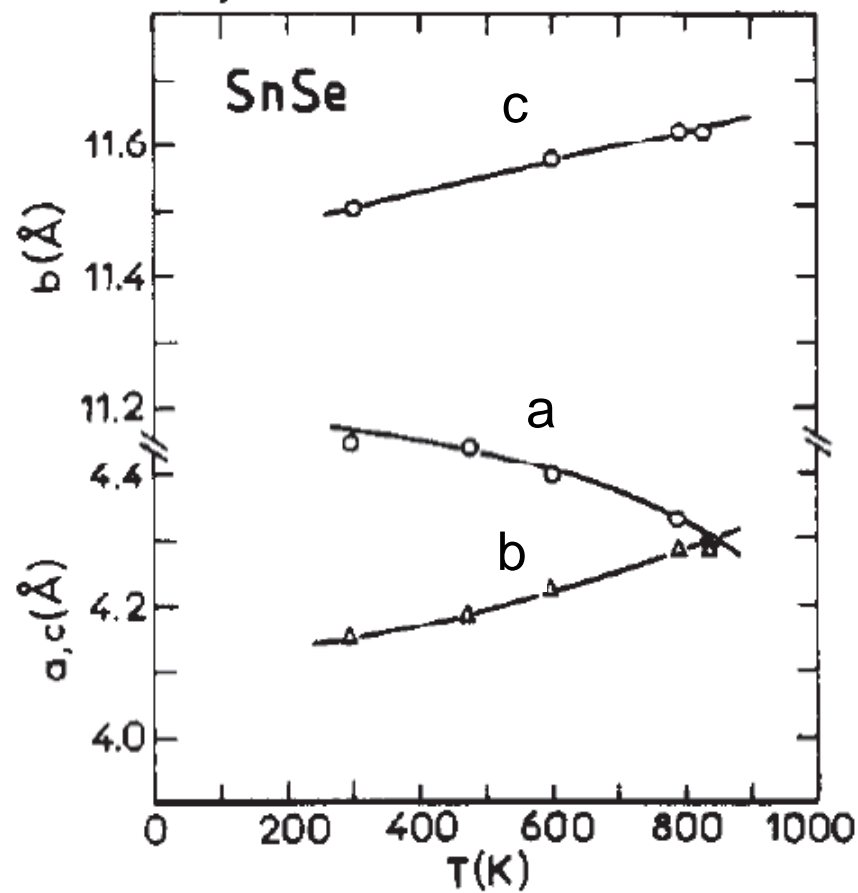
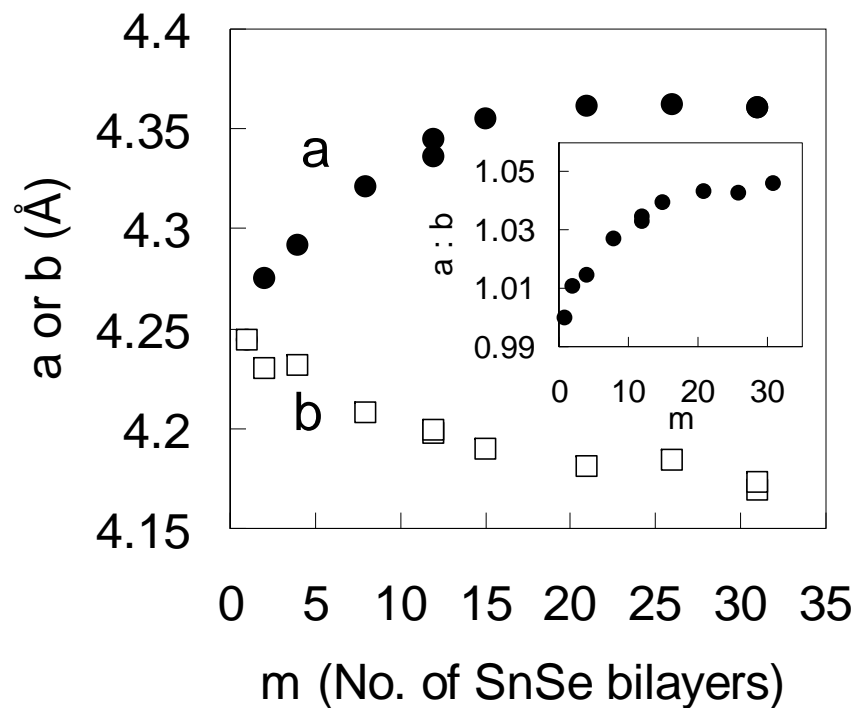


SnSe-MoSe₂ nanolaminates



Size-induced structural transitions

SnSe a, b parameters
In-plane Synchrotron X-ray
Diffraction



T. Chattopadhyay et al., J. Phys. Chem. Solids **47**, 879 (1986).