

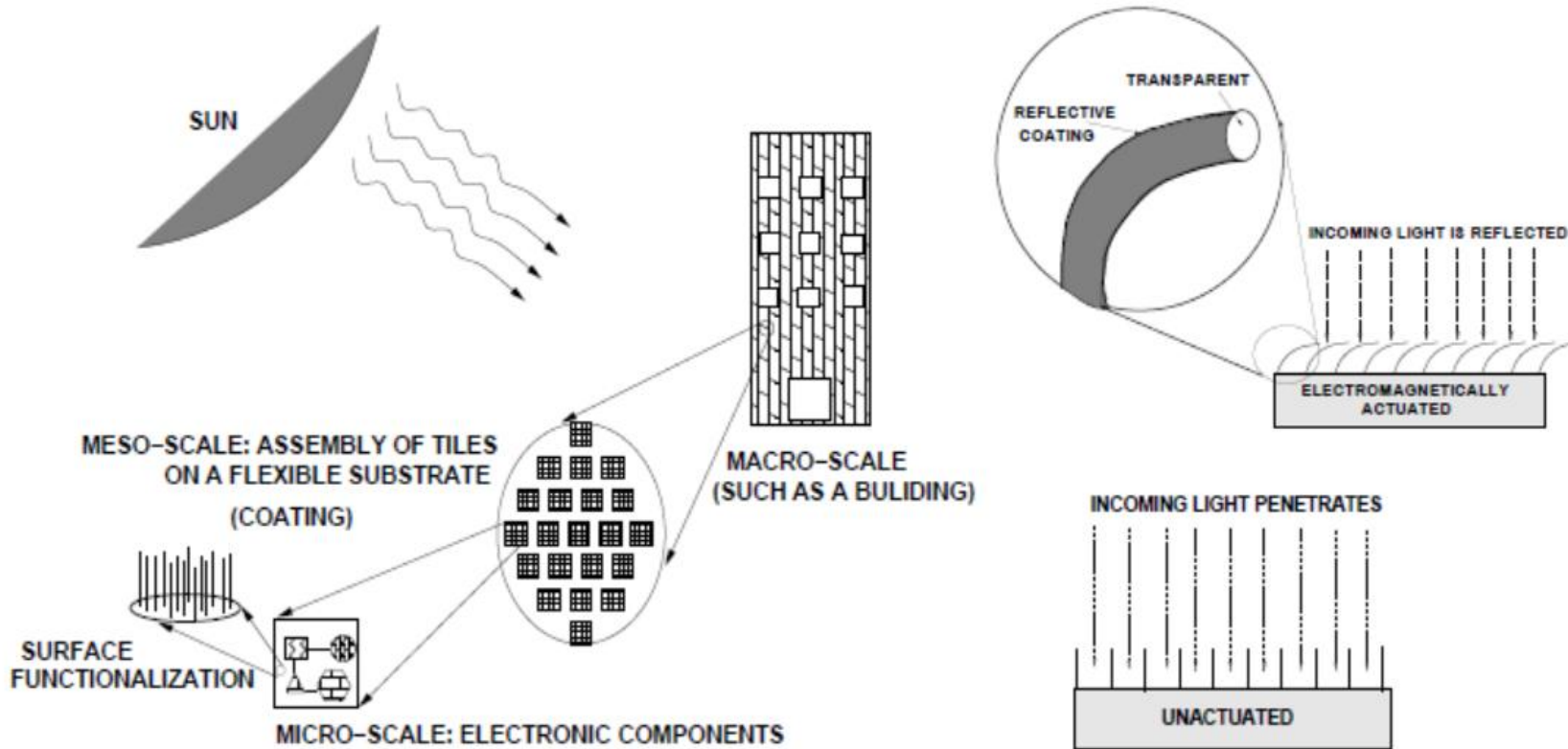
Micro-shutter materials for electromagnetic actuation

Possible experimental approaches

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Computational Design



Experimental Approach

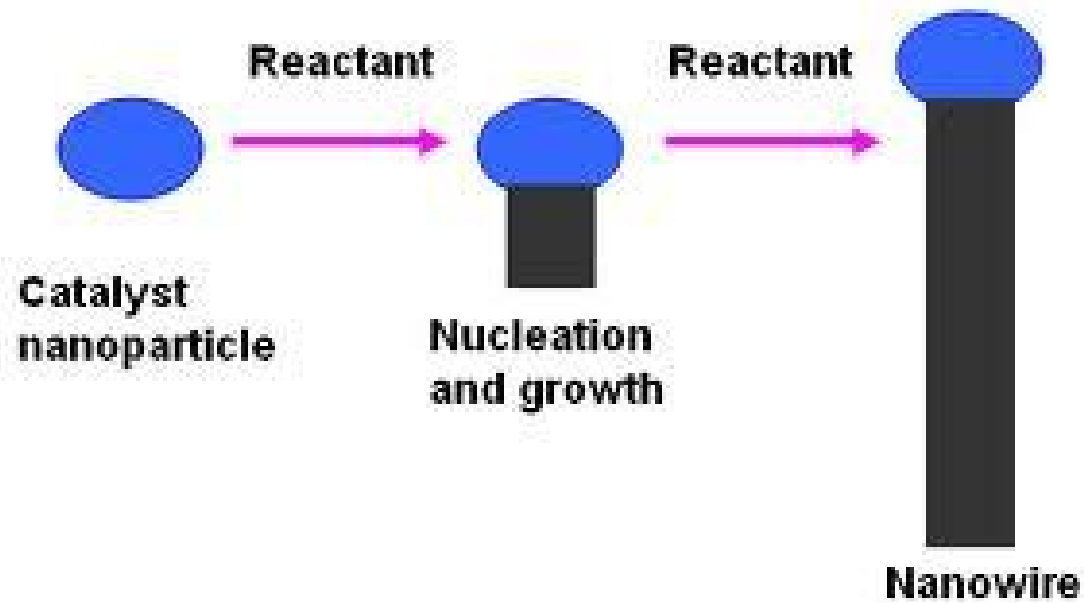
1. Substrate: *Window ? Wall ? Roof ?*

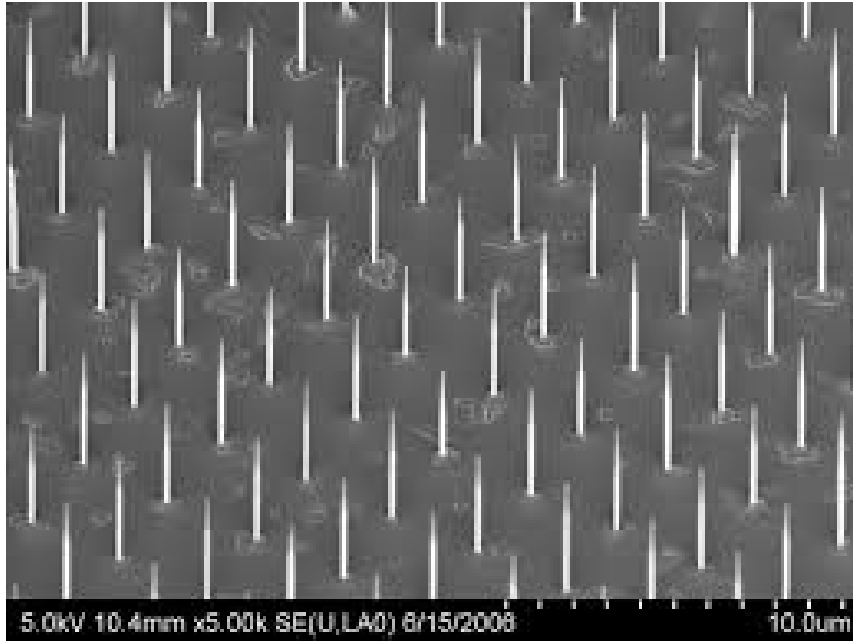
2. Modulation: *Electrical ? Magnetic ? Mechanical ?*

3. Organics vs. inorganics

4. Synthesis:

Nanorod/wire Arrays

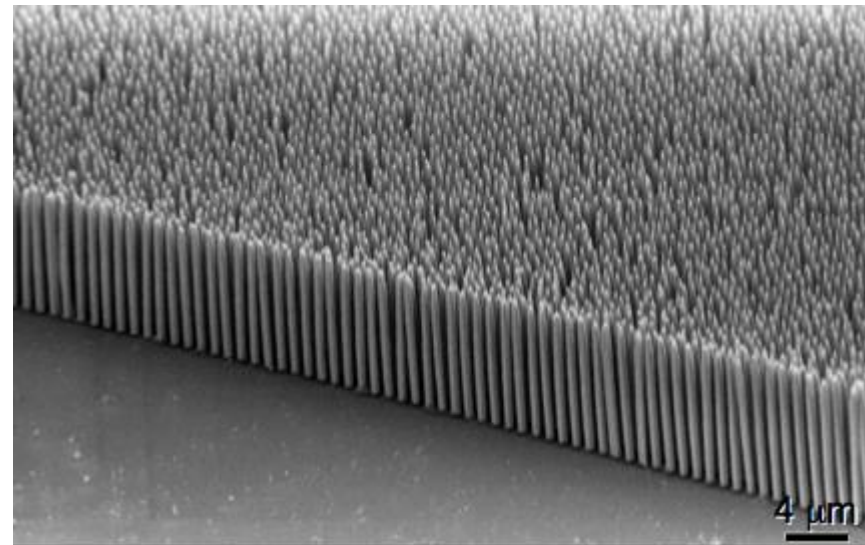




ZnO



Si

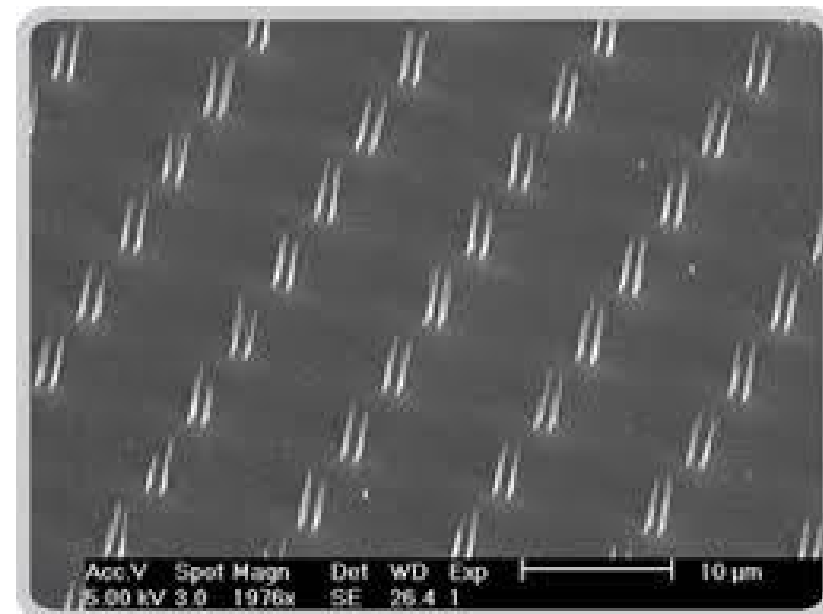


Chemical Vapor Deposition

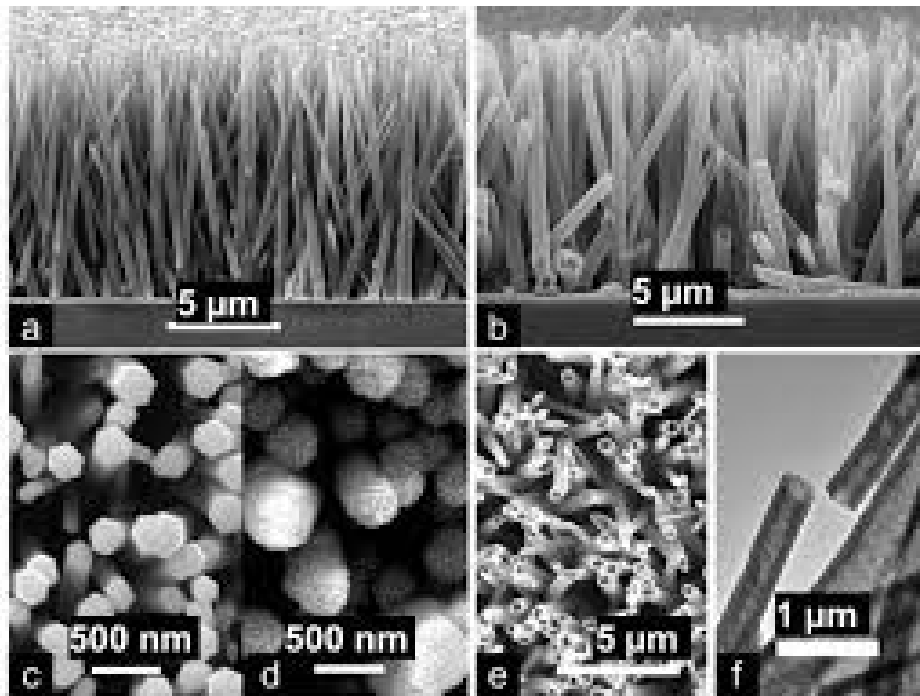
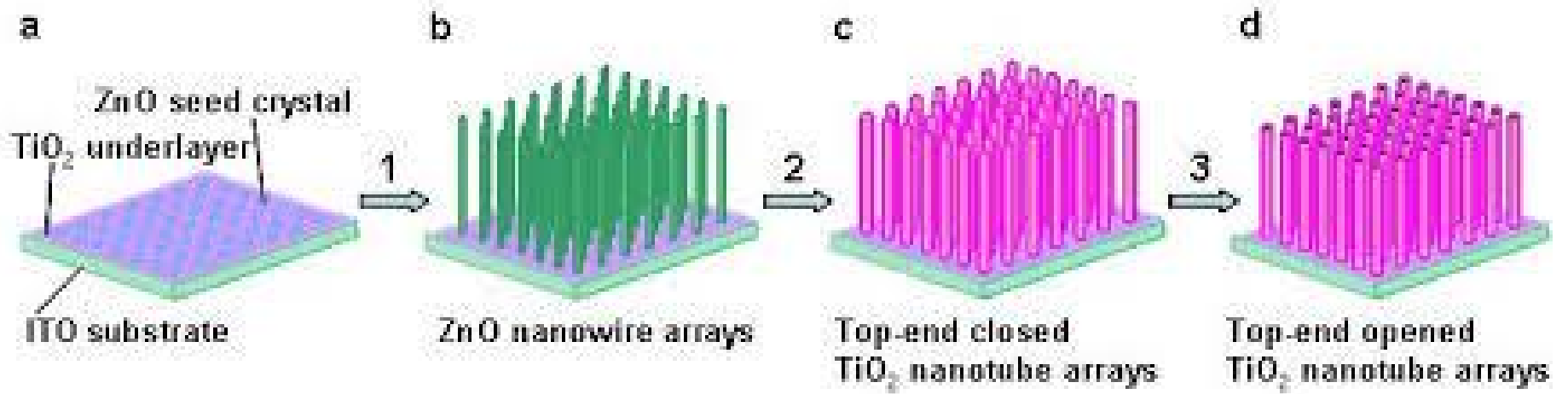
<http://cncf.nanoscience.gatech.edu/node/105>



CNT



Chemical Vapor Deposition



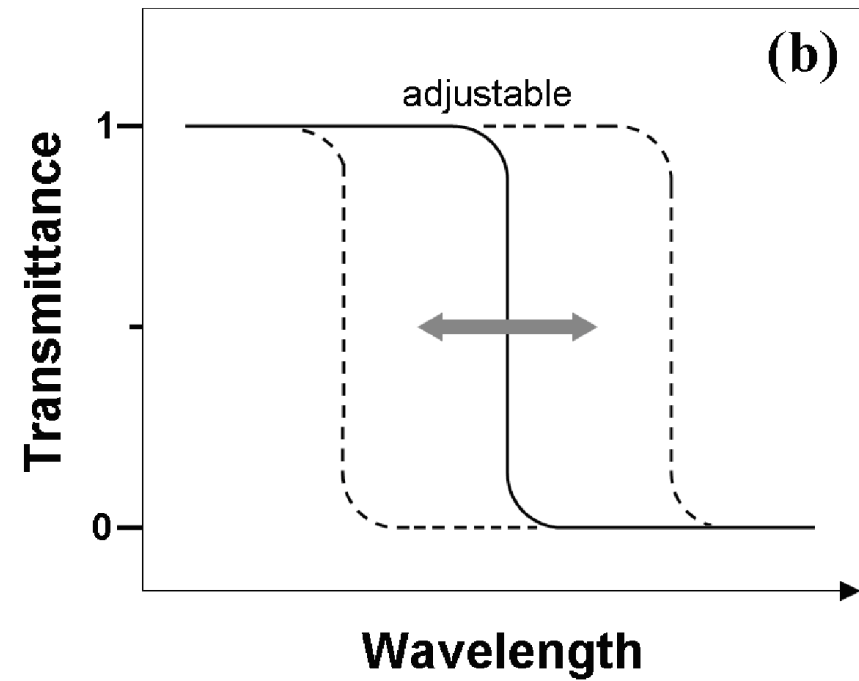
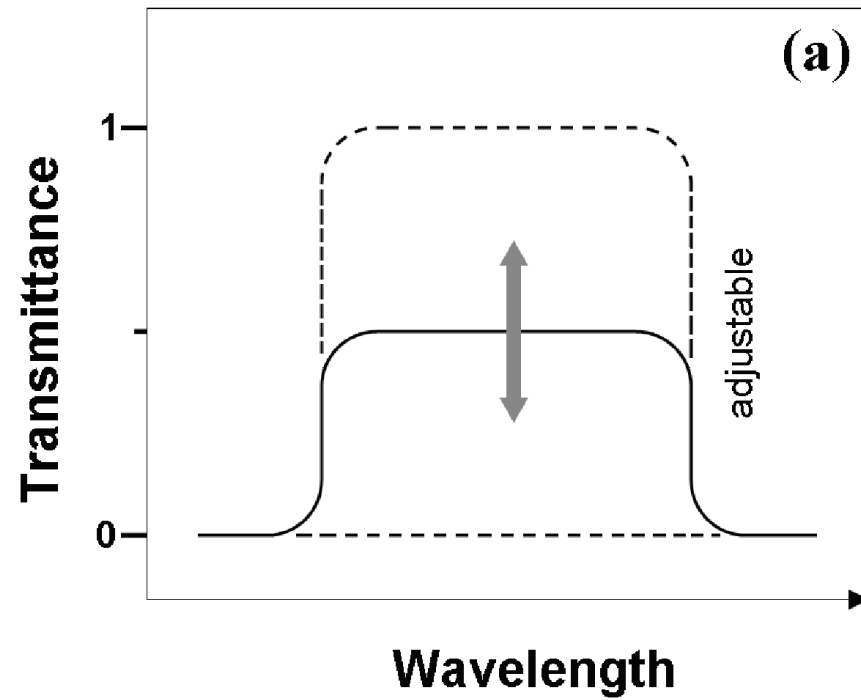
Solution growth of ZnO rods

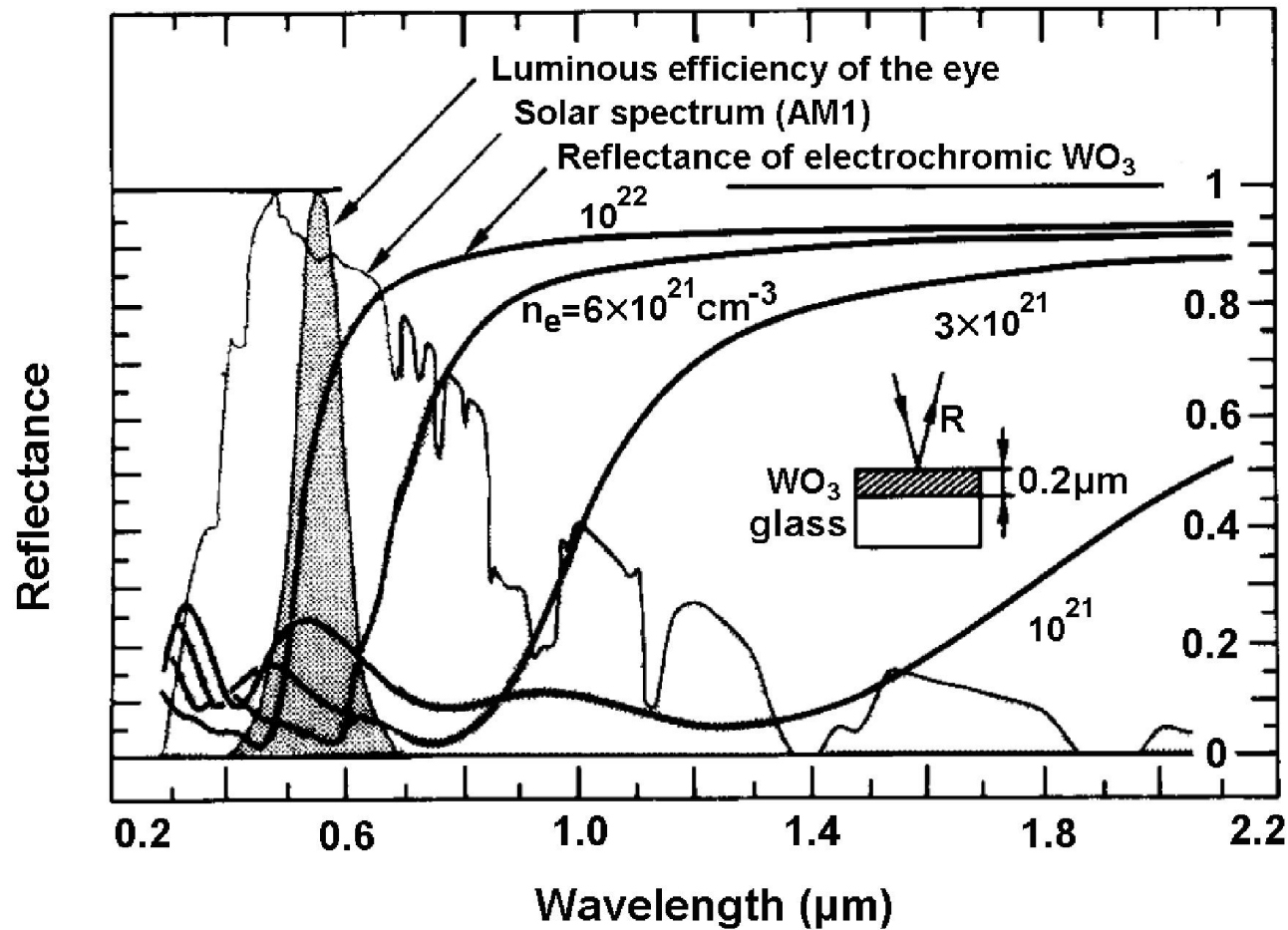
To Bend the Nanowires



When the surface becomes warm/hot, the material change shapes. The solar radiation can be reflected depending on the material design.

Electrochromic materials





Theoretical normal spectral reflectance computed for a WO₃ thin film (device configuration is given in the inset). Curves pertaining to four different electron densities are shown. The shaded areas denote the luminous efficiency of the eye and a typical solar irradiance spectrum (AM1).

Comments & Discussion