Micro-shutter materials for electromagnetic actuation

Possible experimental approaches

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Computational Design
Experimental Approach

1. Substrate: *Window*, *Wall*, *Roof*?
3. Organics vs. inorganics
4. Synthesis:
Nanorod/wire Arrays

Diagram:
- Catalyst nanoparticle
- Nucleation and growth
- Reactant
- Nanowire
Chemical Vapor Deposition

http://cncf.nanoscience.gatech.edu/node/105
Chemical Vapor Deposition

CNT
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 WO$_3$ 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