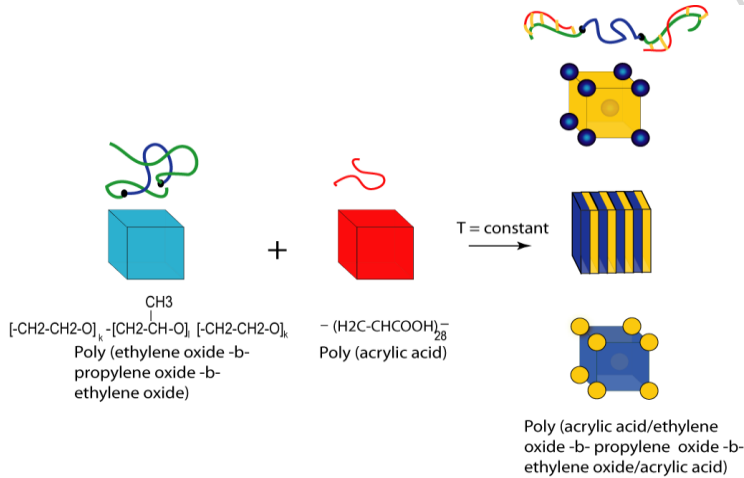
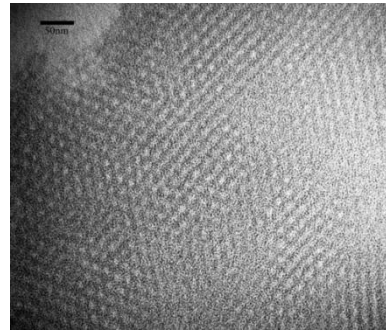


# CHM: Bringing Bottom-Up to Roll-to-Roll

The CHM is developing process tools and materials sets to enable the self-assembly of ordered hybrid materials and imprinting of nanostructured features on roll-to-roll platform for low cost nanomanufacturing of devices. Applications include energy generation and storage, separations, sensors and flexible electronics



**1. Block Copolymer Mimics : well ordered templates from disordered commodity materials, mitigate cost barriers for large area devices**



**2. Additive-Driven Assembly: tailored interactions enable high nanoparticle, fullerene or other additive loadings in ordered hybrid materials**



**3. Tool Platforms: micro-gravure printing and R2R nanoimprint litho provide scalable process platforms**

Polymer Battery

Magneto Dielectrics

Storage Media

Flexible PVs

Flexible Electronics

**4. Demonstration Projects: low cost devices via self-assembly**