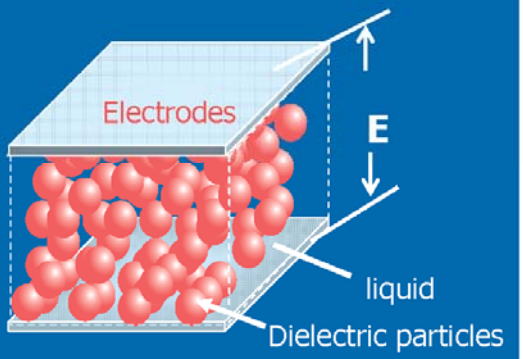
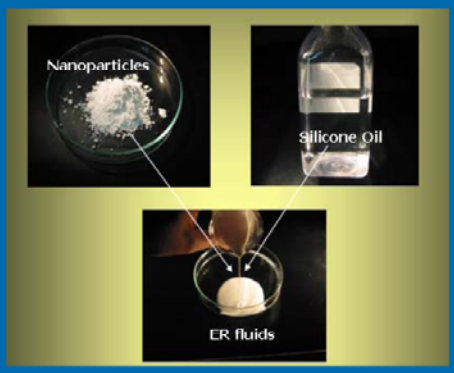
Electrorheological Fluids

Electrorheological (ER) fluids generally are a class of colloids whose viscosity increases under the application of an electric field. For certain ER fluids the application of a strong field (>1000V/mm) can lead to an anisotropic solid, with a yield stress characterizing its strength. As the change of the rheological properties is usually accomplished in 10ms and reversible, ER fluids can potentially function as an interface which translates electrical signals into mechanical signals, opening the possibility of actively controllable clutches, dampers, valves, locks, etc

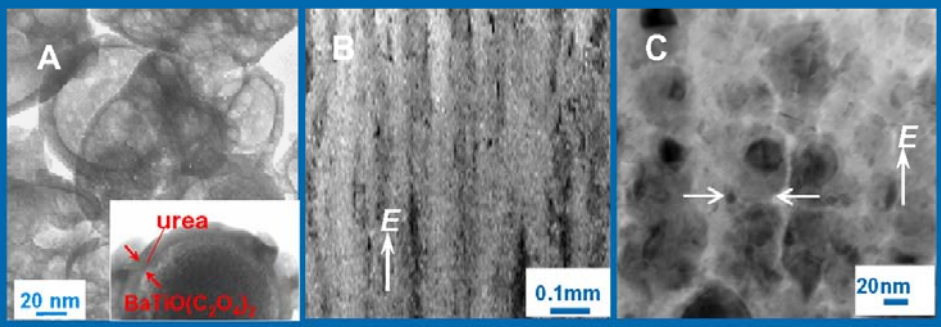




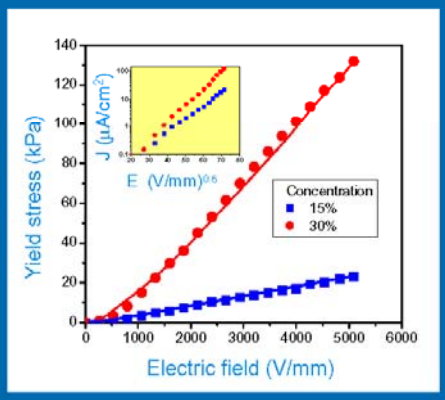
Composition of ER fluids

New Generation Giant ER fluids Invented by HKUST

Nanoparticle Suspensions

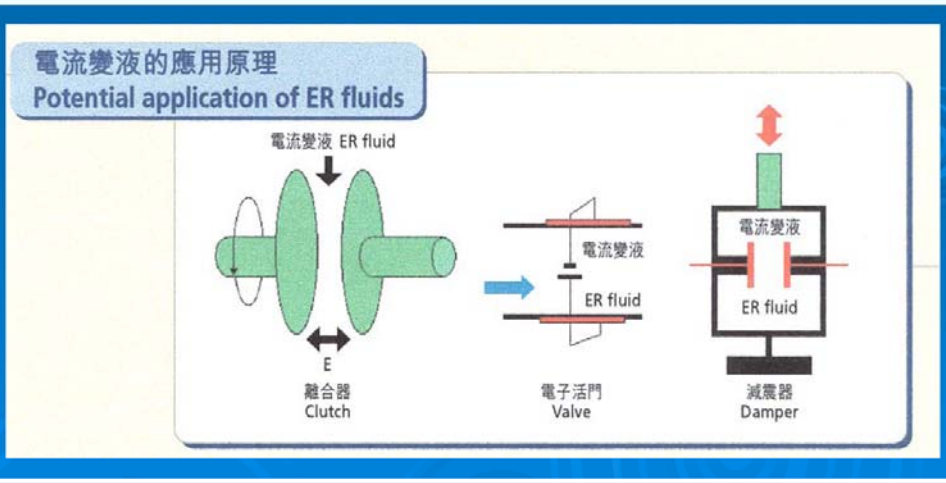


A-surface coated nanoparticles; B-solidification of ER suspension;
C-TEM image inside in ER column



Properties of GER fluid

Comparison of GER fluid with other materials



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