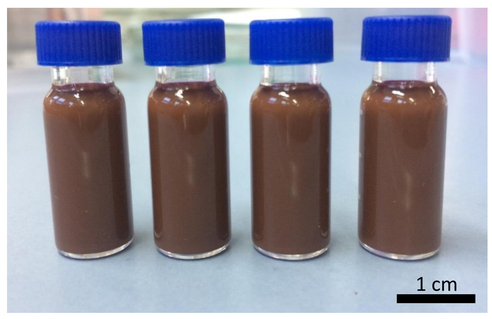
INM - Leibniz Institute for New Materials

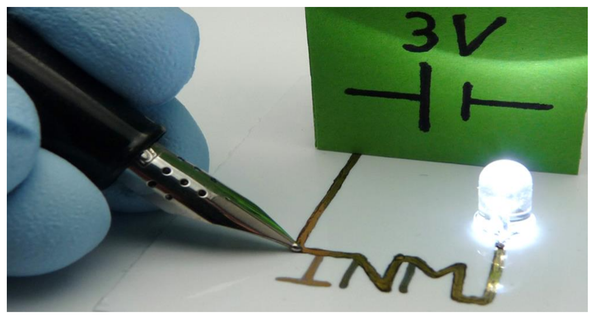
Department Structure Formation [1)]

Department Optical Materials [2)]

Sinter-free hybrid nanoparticle ink for printed flexible electronics [1)]

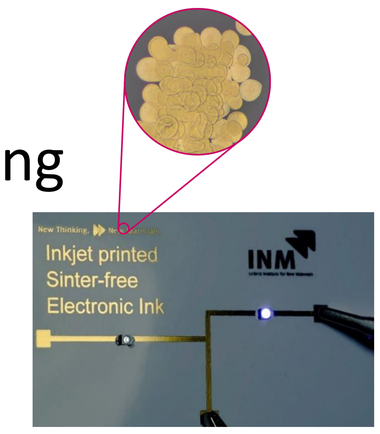
- Ink based on metal nanoparticles
- Conductive ligands stabilize particles
- Room temperature drying



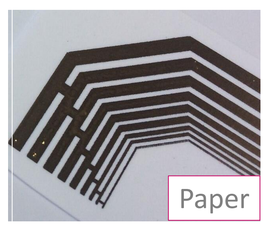


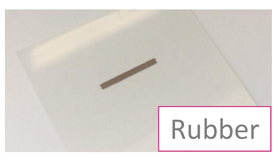
Inkjet printable

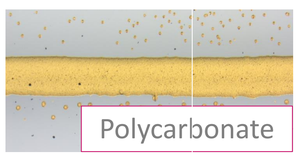
- Nanoparticles connect upon drying
- Printable on different substrates
- Conductivity during deformation
- Resistivity after printing ≈ $4.4 \cdot 10^{-5}$ Ω m

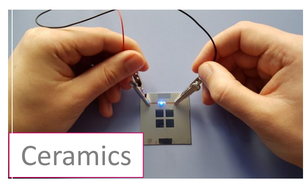


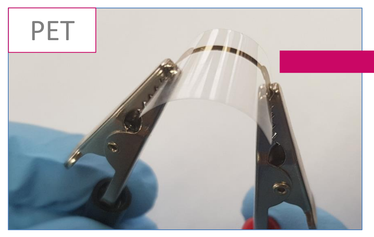
Substrates









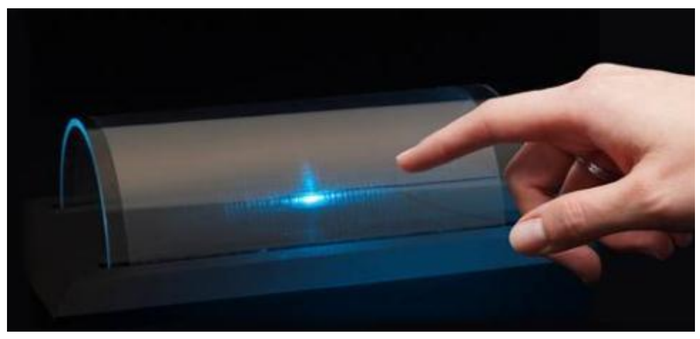


flexible conductivity

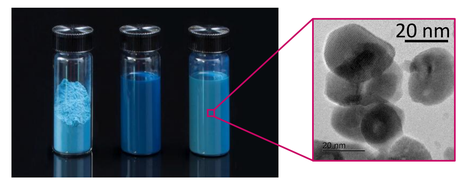
Transparent conductive & flexible coatings by various methods [2)]

Inkjet & gravure printing of TCO inks

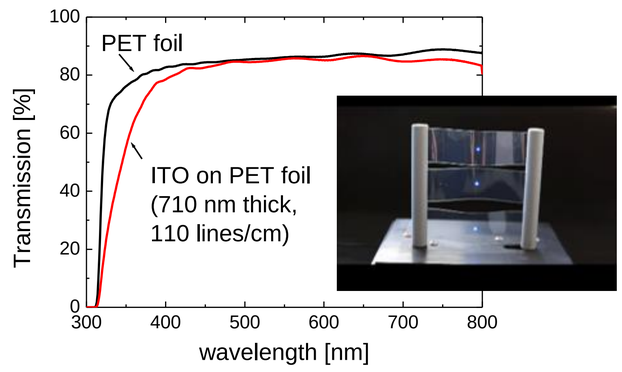
- TCO nanoparticle ink (e.g. ITO)
- Additive process
- Curing: UV-light (< 80°C)
- Flexible
- Direct printing of flexible touch sensor



Flexible touch sensor – inkjet printed on PET foil

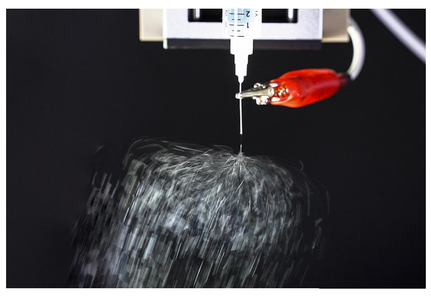


ITO powder, dispersion, ink



Electrospun metallized fibers

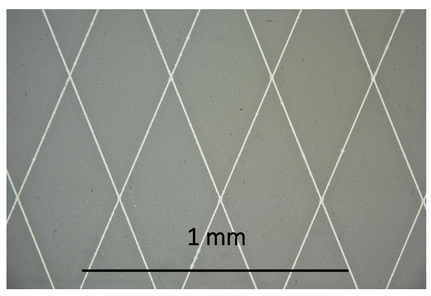
- Cheap, versatile process
- Stretchable electrodes
- No Moiré patterns
- Large area
- Low sheet resistance at high transmission



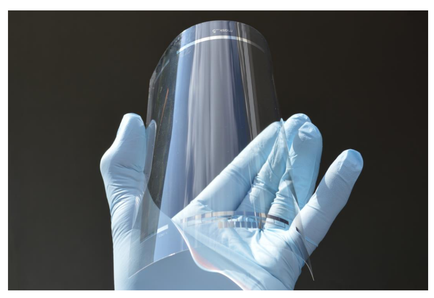
Electrospinning process

E-spun fibers

Silver mesh & tracks by photochemical deposition



Silver mesh
(3 µm line width,
70 Ω/sq sheet
resistance)



Mesh based
touch sensor on
PET foil

- Simple non-vacuum additive process for microscale to macroscopic silver structures

nanoInk NETZWERK