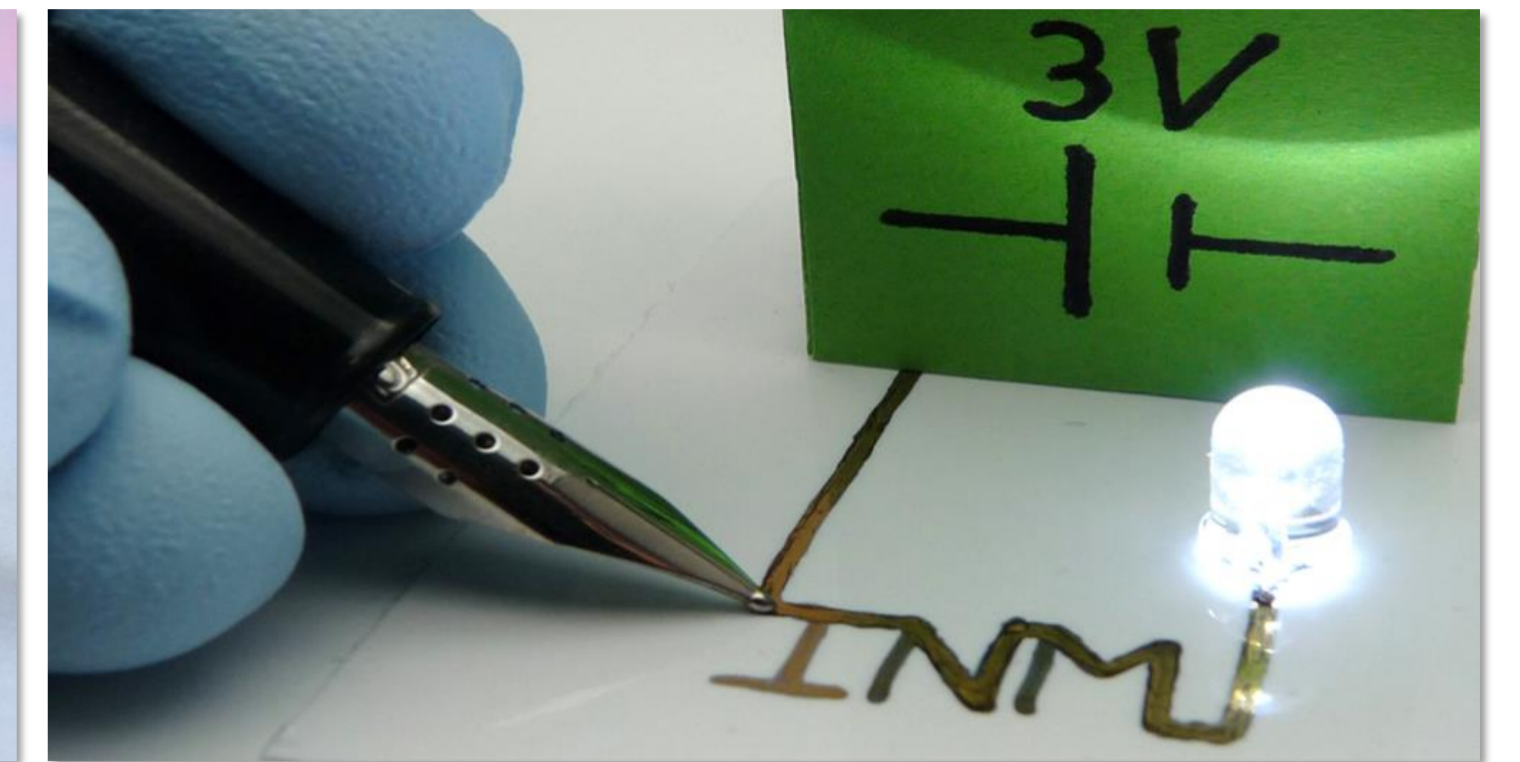




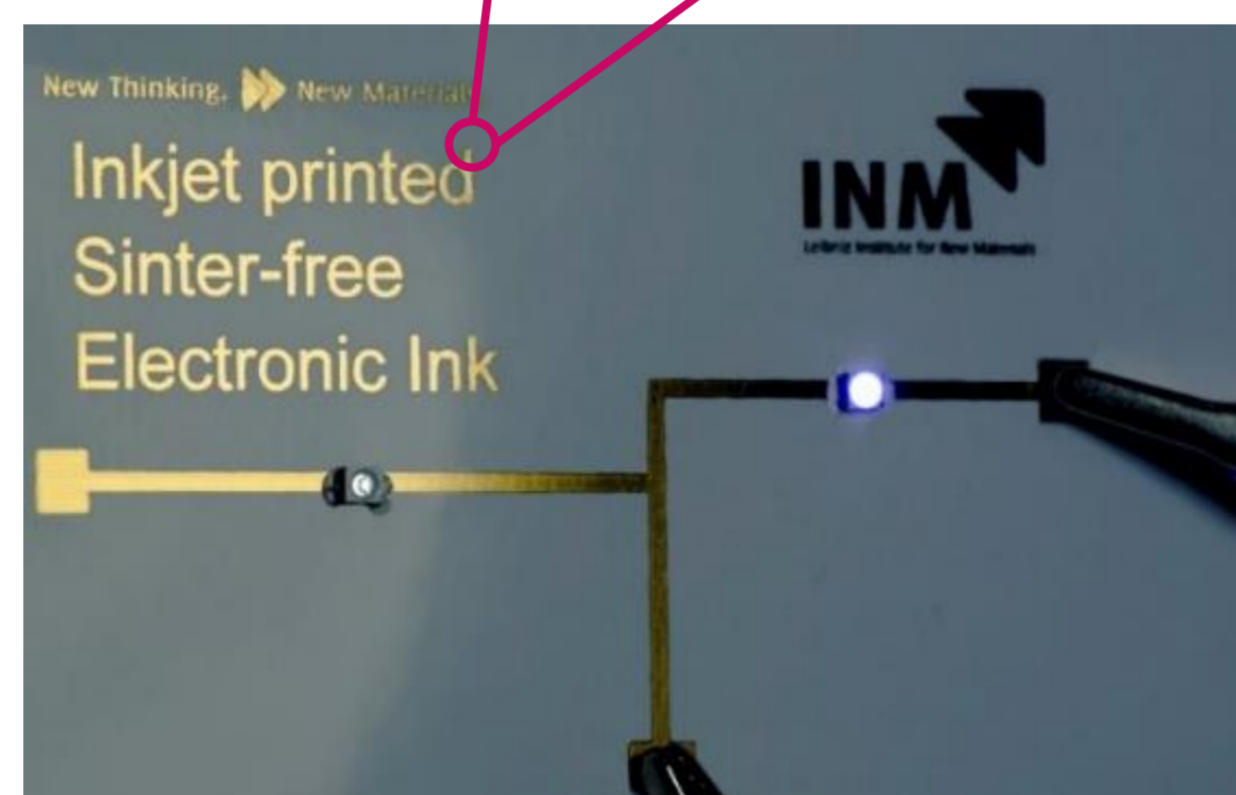
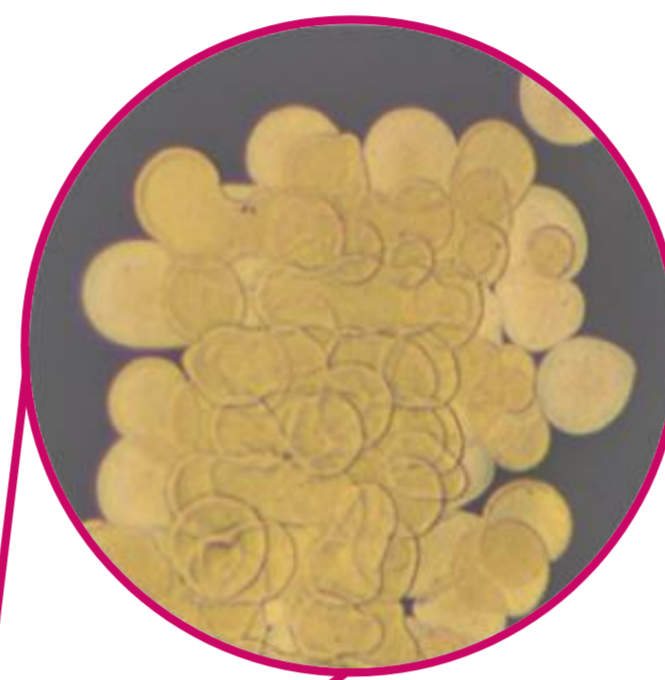
Sinter-free hybrid nanoparticle inks for printed flexible electronics 1)

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

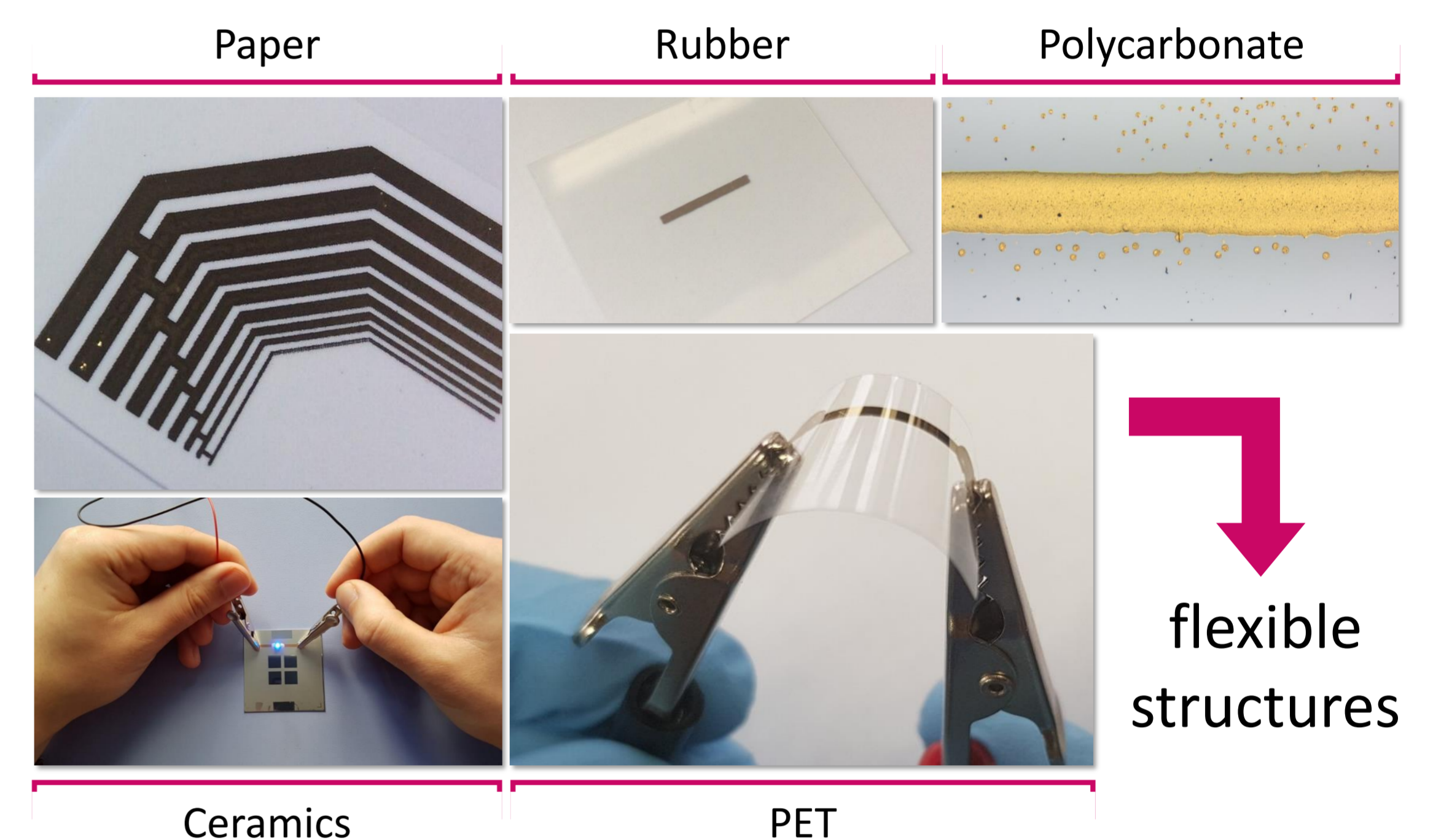


Inkjet printable

- Particles connect upon drying
- On different substrates
- Conductivity during deformation
- Resistivity after printing $\approx 4.4 \cdot 10^{-5} \Omega \text{ m}$



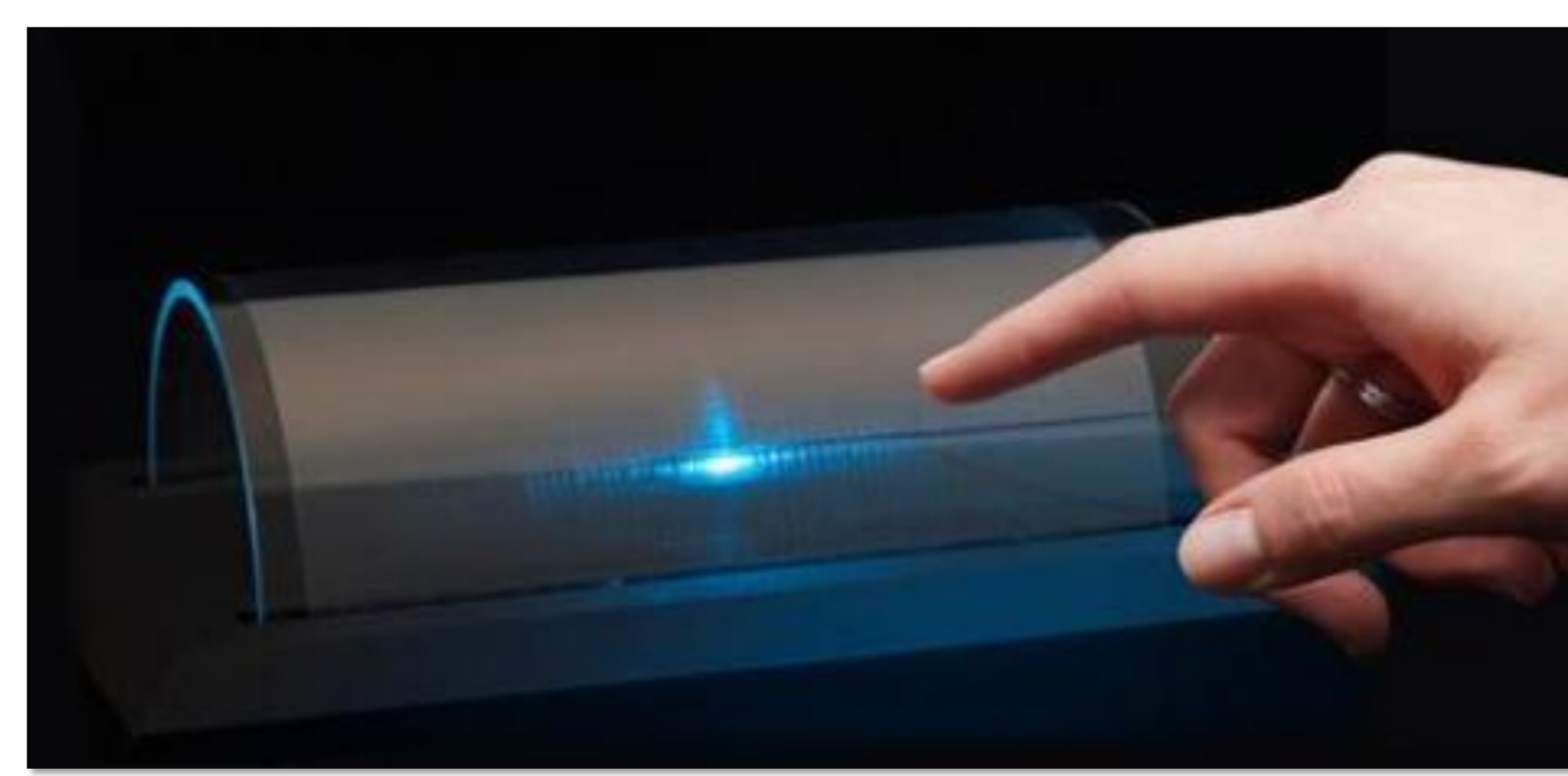
Various Substrates



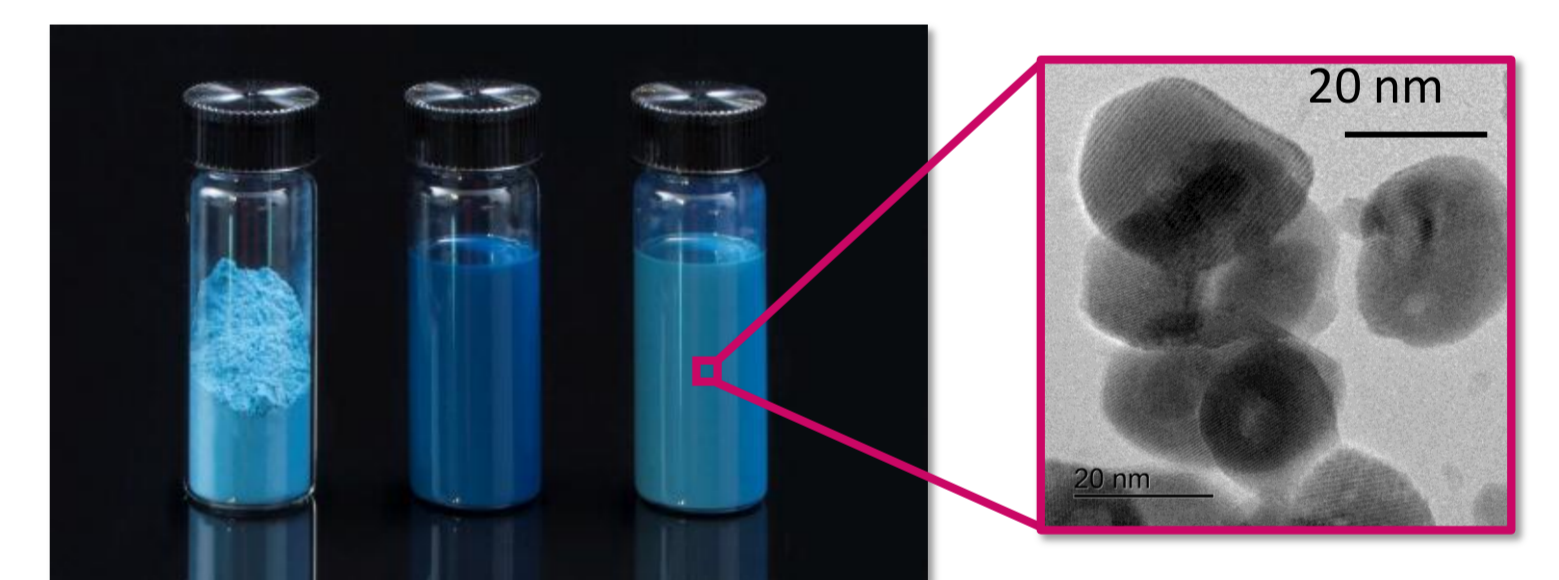
Transparent conductive & flexible coatings by various methods 2)

Inkjet & gravure printing of TCO inks

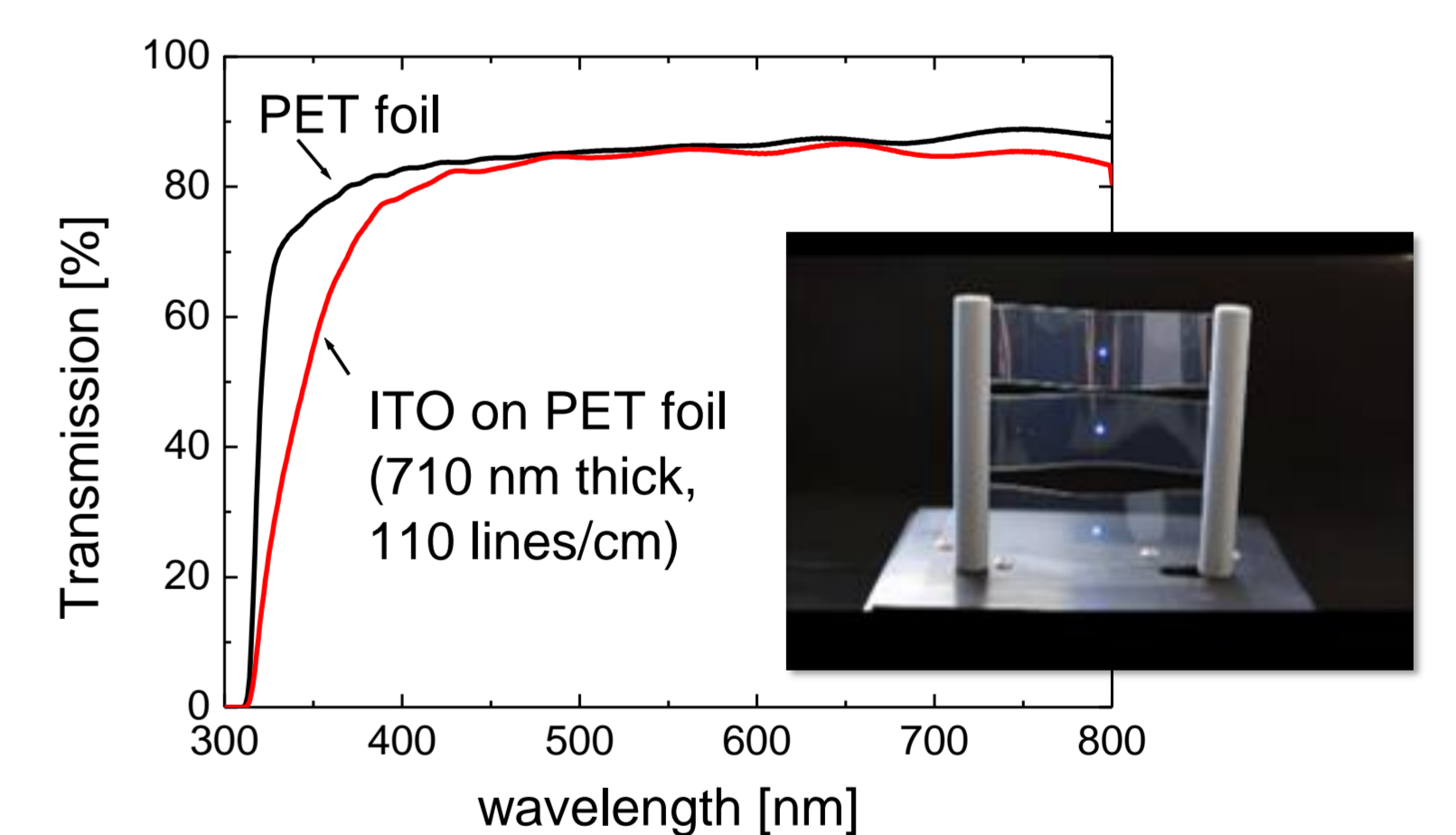
- TCO nanoparticle ink (e.g. ITO)
- Additive process
- Curing: UV-light ($< 80 \text{ }^\circ\text{C}$)
- Direct printing of flexible touch sensor



Flexible touch sensor – inkjet printed on PET foil

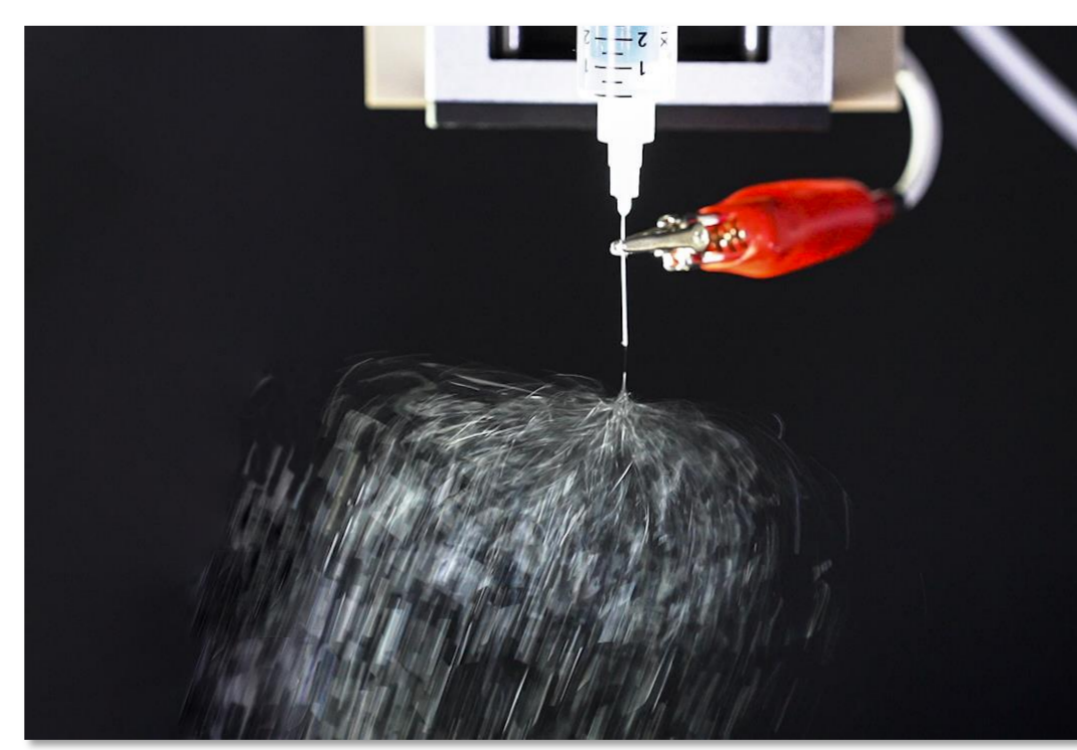


ITO powder, dispersion, ink

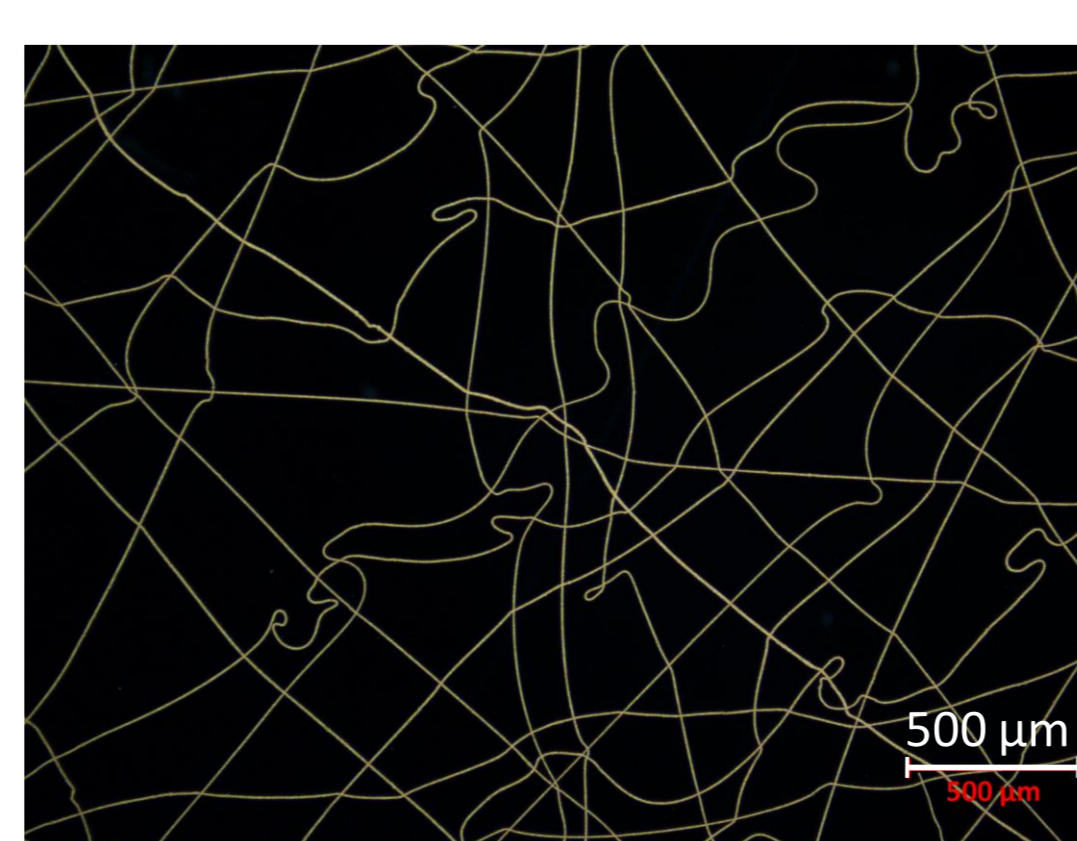


Electrospun metallized fibers

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

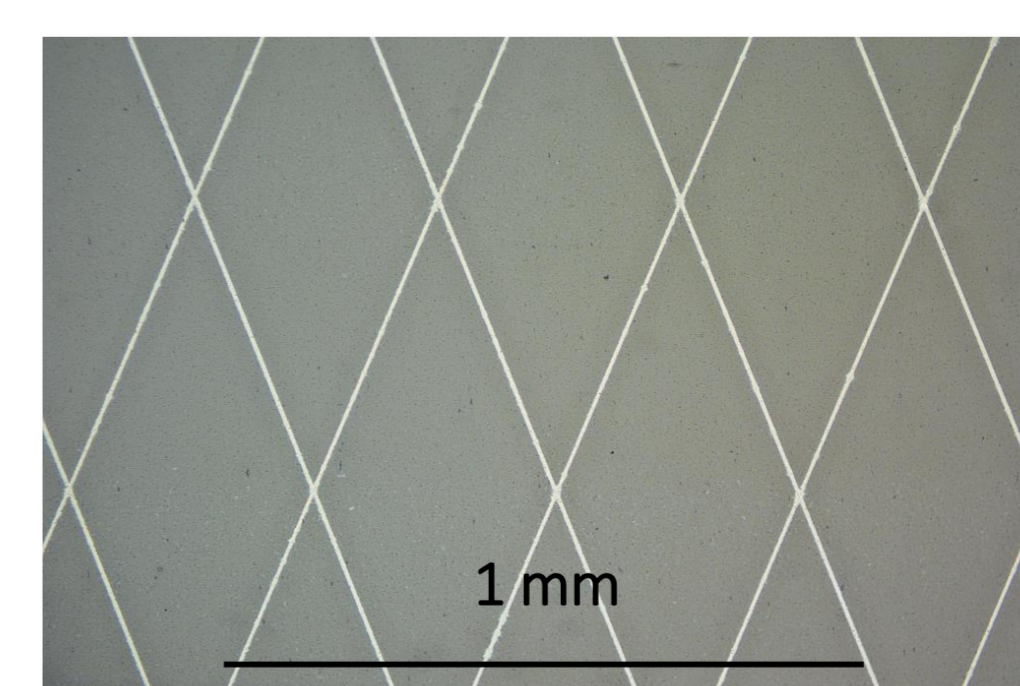


Electrospinning process



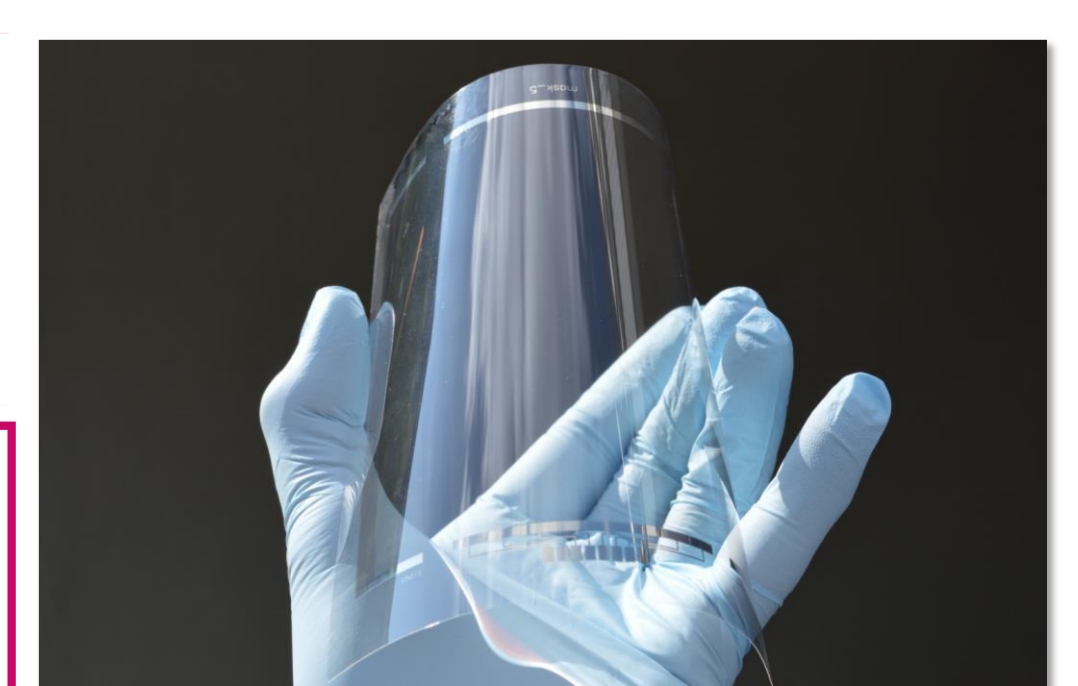
E-spun fibers

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