CB TEC España — Transparent Conductive Metal-Mesh Films

## TECHNOLOGY DESCRIPTION

CB TEC España has developed a scalable and cost-efficient method for producing transparent conductive films using a self-organized crackle template process.

## PROCESS OVERVIEW

1. A liquid crackle template layer is applied onto a flat polymer film.

2. During controlled drying, the coating naturally forms a uniform micro crack network.

3. A metal layer is deposited across the entire surface using standard PVD magnetron sputtering.

4. The template is removed (lift-off), taking with it the metal lying on top of the coating.

5. A clean metallic mesh remains on the film, exactly reproducing the crack network.

## KEY ADVANTAGES

• Fully replaces ITO in many transparent conductor applications

• No lithography, no masks, no etching

• Template formation occurs entirely in liquid phase

• Uses standard PVD magnetron sputtering

• Tunable mesh geometry via crack width control

• High durability due to continuous metallic pathways

• No nanoparticle inks, no chemical etching steps

## PERFORMANCE CHARACTERISTICS

• Sheet resistance determined by metal type and thickness

• Transparency controlled by crack width and mesh density

- Haze adjustable through template thickness and metallization parameters
- Mesh uniformity governed by intrinsic self-organization of the template

COMPATIBLE MANUFACTURING METHODS

- Film substrates (roll-to-roll and sheet)
- Liquid-phase crackle template coating
- PVD magnetron sputtering
- Standard lift-off template removal