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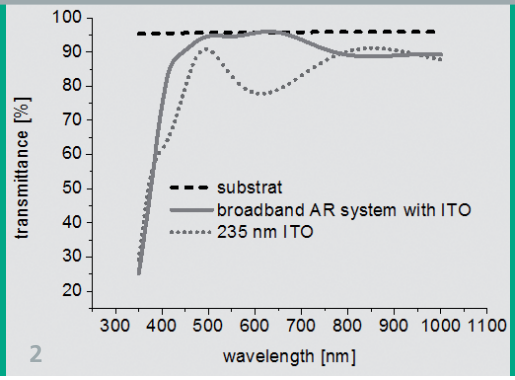

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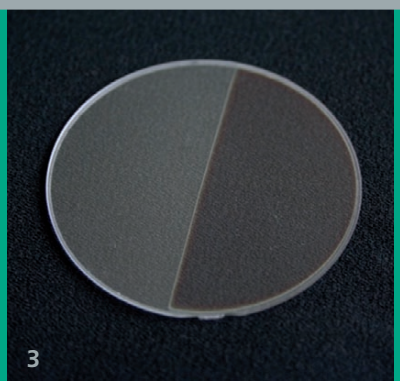
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1 *APS Advanced Plasma Source.*

2 *Transmittance spectra of uncoated substrate, ITO single layer, and a broadband AR system including a thin ITO film (R < 20Ω/□).*

3 *Zeonex substrate, one half coated with an ITO-AR-system (R < 20Ω/□).*

LOW-TEMPERATURE DEPOSITION OF TRANSPARENT AND CONDUCTIVE COATINGS

Motivation and objective

The possible fields of application of transparent and conductive oxides (TCOs) range from IR reflectors and anti-static coatings to transparent electrodes. The ever-increasing use of light, break-proof plastics, such as Polycarbonate and Zeonex, demanded the development of a low-temperature deposition process.

Low-temperature deposition

With the use of plasma-ion assisted deposition and sputtering processes, highly transparent and conductive indium tin oxide (ITO) and aluminum-doped zinc oxide coatings can be fabricated on plastic substrates at temperatures below 100°C.

Coating properties

Using the established manufacturing process, coatings with a specific resistivity in the range of 4 μΩm can be fabricated. Hence it is possible to produce thin films with a sheet resistance below 10 Ω/□. Due to low absorption, with a mean extinction coefficient of $7 \cdot 10^{-3}$ in the visible spectral range, it is possible to produce highly transparent layers and coating systems. Weatherproofness, abrasion resistance and low surface roughness permit the implementation on antireflection and reflector optics for many applications.

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