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Surface Properties and Coatings
PP-17
Synthesis and Characterization of Boron Nitride Thin Films on Glass Substrate
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Boron nitride (BN), one of the high-tech products of boron, is a material with superior properties such as refractory properties at high temperatures, high thermal shock resistance, high thermal conductivity, electrical insulation, chemical and mechanical stability, lubrication and easy process ability. Thanks to this features thin h-BN coatings find applications in several fields such as protective coating for oxidation, humidity and corrosion. In this study boron nitride thin films on glass substrates were manufactured from boric acid and urea solution by dip-coating sol-gel technique. Different concentrations of metanolic boric acid solutions were studied to form BN thin film coatings on glass substrate. The impregnated thin films produced via this technique were heated to 550 °C at a rate of 5°C/min for 2 h in a furnace with N2 atmosphere. Scanning electron microscopy (Zeiss Supra 40VP) was employed to investigate the BN coating morphologies. The phases of the nitridation products were characterized by X-ray diffraction (XRD, Panalytical, Empyrean). Surface roughness of thin films was determined by using Atomic-Force Microscopy (AFM). The best molar concentration of thin films was decided according to the structural and roughness properties of manufactured samples.
Keywords: Boron nitride, thin film, dip-coating, surface properties

Surface Properties and Coatings
PP-18
Mesoporous Sol-Gel Based Silica Thin Films with Ordered Pore Orientation as Antireflective Coatings on Glass
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Antireflective coatings on glass have increasing applications, on e.g. cover glass of PV modules, display glass, spectacle lenses or window glazing's. Sol-gel derived mesoporous coatings can be tuned both in terms of porosity and thickness, thus allowing tuning of the refractive index. Additionally, the sol-gel approach is bottom-up, which facilitates easy upscaling. In the current work we present dip-coated mesoporous SiO_2 coatings of different pore orientation and film thickness prepared on microscope glass slides and silicon wafers. The silica coatings were derived from TEOS (tetraorthosilicates) mixed with ethanol and diluted HCl. Hexagonal and