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## OPTICS & OPTICAL COATINGS

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### Multispectral Optical Coatings Are Tough, Versatile for IR Applications

Hybrid diamondlike carbon (h-DLC) coatings for multispectral use combine the hardness of protective DLC coatings with the multispectral functionality of high-end IR coatings. Optical coatings are used in numerous industrial applications for optical components. Besides the optical properties, the mechanical properties of these coatings play a significant role in the functionality of the optical component. Thin layers made of amorphous hydrogenous carbon (a-C:H) have outstanding mechanical characteristics, including high hardness, and therefore have a high environmental resistance. However, their optical performance is limited because of the single-layer design of these thin-layer coatings.

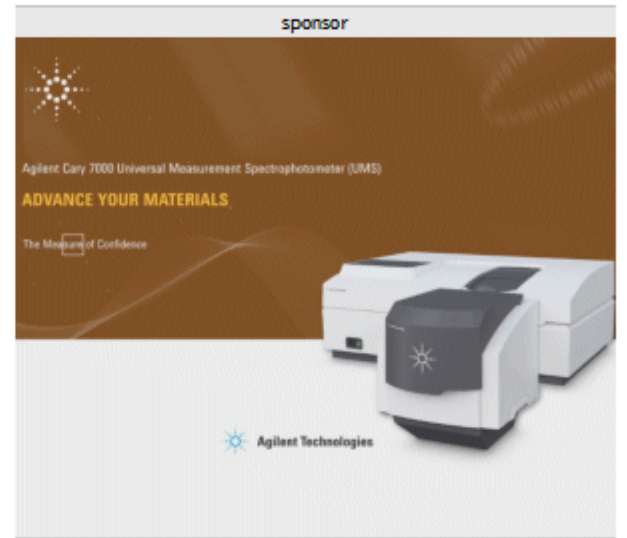
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### Spray-On Flat Lens Works in the UV

A metamaterial-based flat lens that's easy to fabricate and that can bend and focus UV light could improve photolithography, nanoscale manipulation and manufacturing, and even high-resolution 3-D imaging, say scientists at the National Institute of Standards and Technology.

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### Gaining deeper insights into thin film response – overcoming spectral oscillations using the Cary Universal Measurement Accessory

Designers and manufacturers of high quality multilayer optical coatings require reliable methods to measure optical constants of thin  $\lambda$ m materials with a high degree of accuracy. This is normally achieved using UV-Visible-IR spectrophotometry to acquire normal and quasi-normal transmittance (T) and reflectance (R) spectra of a sample. In this paper we demonstrate how an Agilent Cary 5000 UV-Vis-NIR spectrophotometer equipped with a new Universal Measurement Accessory (UMA) is able to provide previously unreported insights into thin  $\lambda$  m characterization due to its ability to measure T and R without moving the sample.

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### OCT Improves Lens Development

Using OCT during the manufacture of a new type of optical lenses could improve their development by providing researchers with a better picture of the complete structure that makes up the material.

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### Metamaterial Flexible Sheets Could Transform Optics

A new metamaterial design that aims to replace bulky optical devices could improve IR thermal cameras, energy harvesting, and security screening and radar systems.

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### With Infrared, Military Owns More Than the Night

Short-, long- and mid-wave IR imaging helps defense agencies find targets and even determine intent. At the US Army's Night Vision and Electronic Sensors Directorate, the goal is to see - day or night - through smoke, fog, dust or any other airborne obscurant. The directorate conducts sensor research and development so that soldiers can see effectively in a variety of conditions.

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