Thin Films with Engineered Nanomorphology

(SC664)

at

Optical Science and Technology, the SPIE 49th Annual Meeting

Denver, CO – 2-6 August 2004

This course provides attendees with a basic knowledge of the morphology and the optical response characteristics of Sculptured Thin Films (STFs), which are nanoengineered by directional physical vapor deposition (PVD) onto surfaces at oblique angles. The first part of the course focuses on the nanowire-shaped morphology of STFs at the 1-1000 nm length scales, with emphasis on growth techniques and ways to achieve distinct engineered nanomorphologies through simple movements of the substrate during growth. The second part of the course focuses on the modeling of STFs, the effect of morphology on reflection and transmission characteristics, and the principles underlying STF devices such as filters, polarizers, sensors and radiators. Computer programs are provided as part of the course.

This course will enable you to:

- select conditions to grow STFs with distinct nanomorphologies
- understand opportunities and limitations of morphology evolution
- make models to predict optical response characteristics of STFs
- solve electromagnetic equations to compute remittances
- design STF devices

INSTRUCTORS

Russell Messier is a Professor of Engineering Science and Mechanics at Penn State, with over 30 years of experience in growth and morphology of thin films. He is a Fellow of the American Vacuum Society.

Akhlesh Lakhtakia is a Distinguished Professor of Engineering Science and Mechanics at Penn State. He is a Fellow of SPIE and OSA. Both instructors are co-enunciators of the STF concept.

Friday, 06 Aug 2004 – 8:30AM to 5:30PM

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