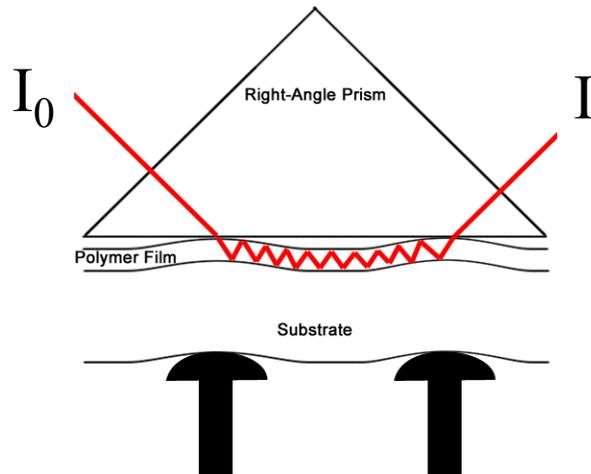


Guided Wave Depolarized Light Scattering

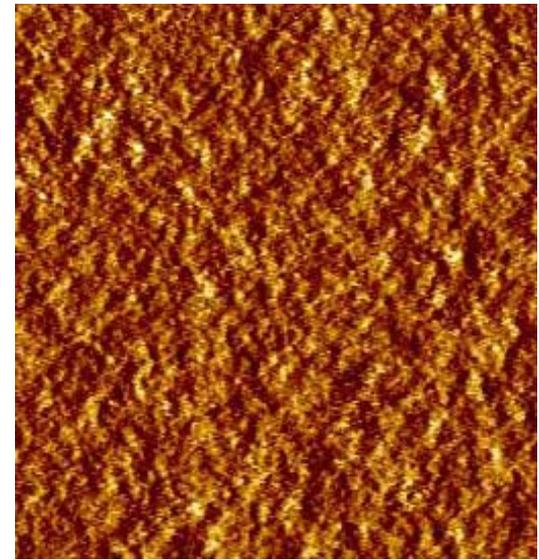
Bruce Garetz (Polytechnic University, Brooklyn)
and Nitash Balsara (University of California,
Berkeley), DMR-213508

A new probe for studying the grain structure of thin films has been developed. A planar optical waveguide has been fabricated by depositing an ordered block copolymer film on a low refractive index substrate (fused silica). The depolarized scattered beam is guided through the film and detected using a photodetector. Results show that the depolarized signal is proportional to the grain size determined by AFM.



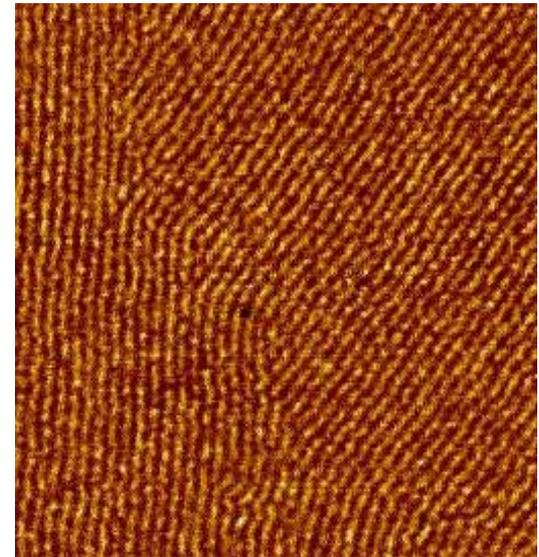
Laser coupling into and out of a structured film. I and I_0 are the incident and output intensities, respectively.

300nm



AFM image of poorly ordered diblock copolymer film with $I/I_0=6.1 \times 10^{-3}$.

200nm



AFM image of a well ordered diblock copolymer film with $I/I_0=5.9 \times 10^{-2}$.

Guided Wave Depolarized Light Scattering

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Outreach:

NPB is a member of the Special Scholarships Committee at Berkeley. Our mission is to help the professional development of minority and economically disadvantaged students gain in Berkeley. We work with the local high schools, organizing workshops for educating students and teachers. Special hands-on tutorial sessions are organized at the University for students in their freshman year to facilitate their transition from high school to university classes.

Education:

The research is being carried out by two PhD students, Ferass Abuzaina (Polytechnic University) and Jeffery Wilbur (Berkeley). Their efforts are augmented by 3 undergraduate students, Kamaldeep Gandhi and Thomas Redis at Polytechnic University and Julie Chan at Berkeley.



K. Gandhi and T. Redis making optical measurements.