

***Issues for smooth roughness-free nano-patterning
with lithography and plasma etching***

(EU projects: More-Moore, NanoPlasma,

contract with INTEL)

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Subjects of study

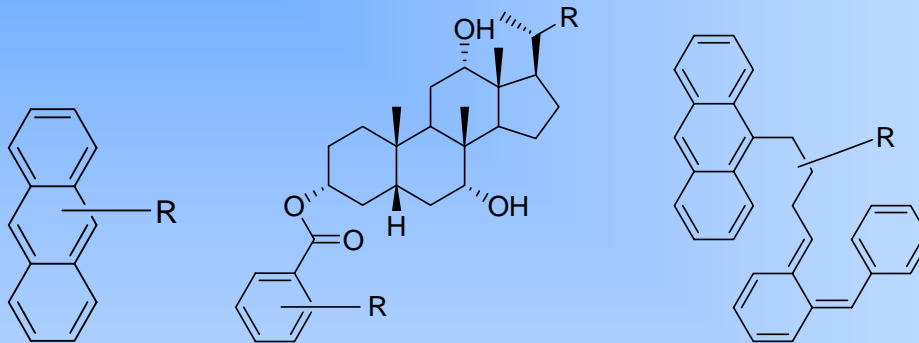
- Novel Molecular Photoresists for nano patterning with e-beam and EUV
- Characterization of photoresist Ultra Thin Films (<100nm)
- Simulation of Nanolithography with Monte Carlo and molecular methods

- Sidewall (Line Edge) of nanostructures: Metrology – Characterization
- Novel plasma etching processes for micro and nanopatterning
- Surface roughness and nanotexture from plasma treatments: Metrology – Characterization -Simulation

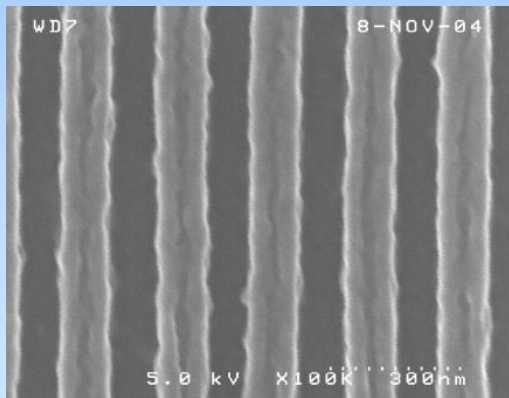


Achievements I

- Novel Molecular Photoresists were developed
- Evaluation at Sandia, and in house at IMEL with e-beam
- Drafting patent for polycarbocycle based photoresists
- Invited paper in MNE 2005

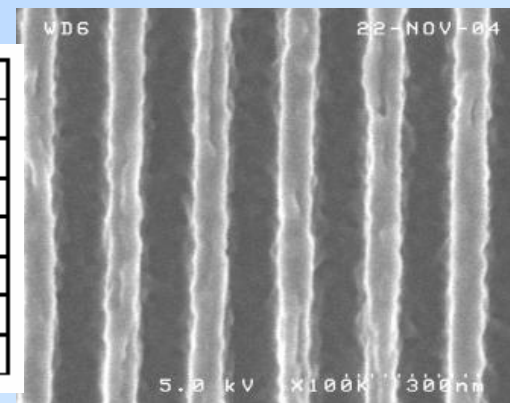


Typical structures of molecular resists



M16 resist 110 nm 1 to 1

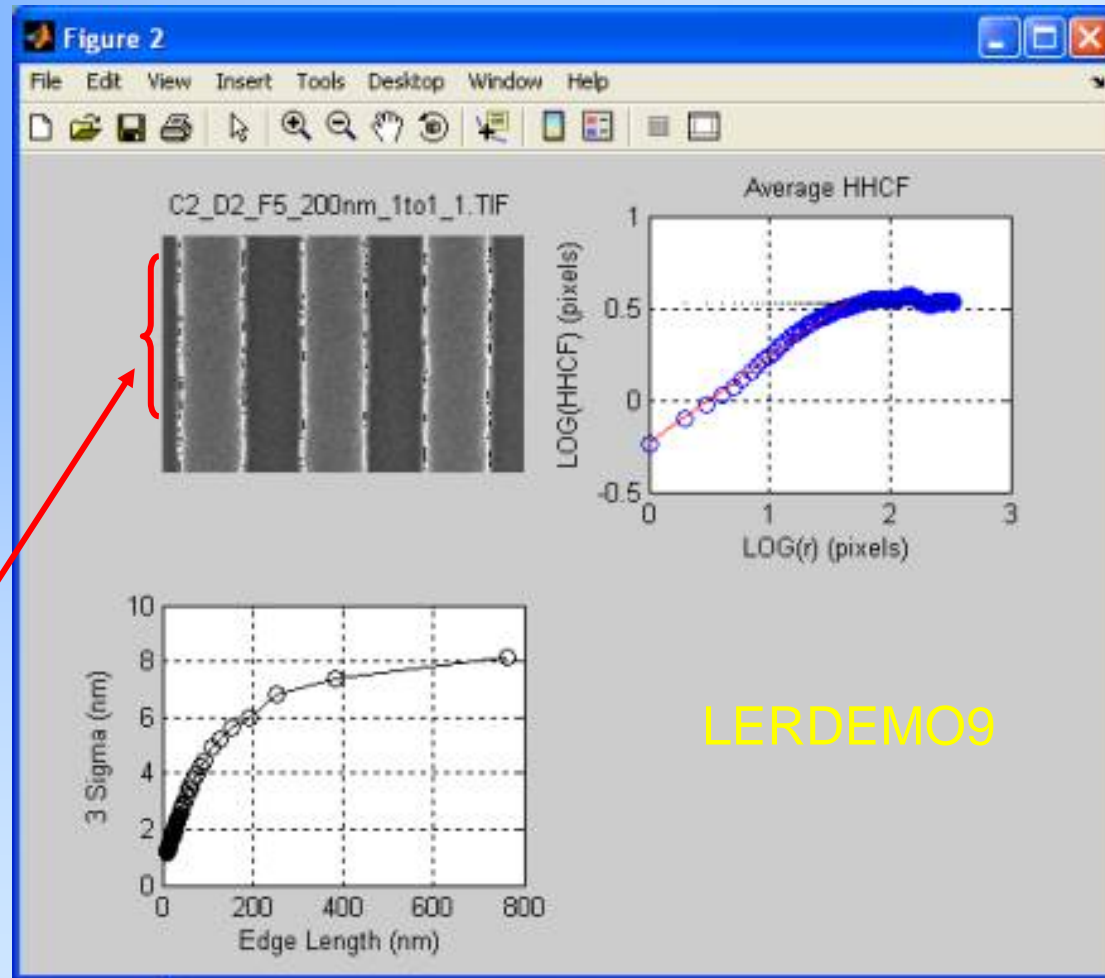
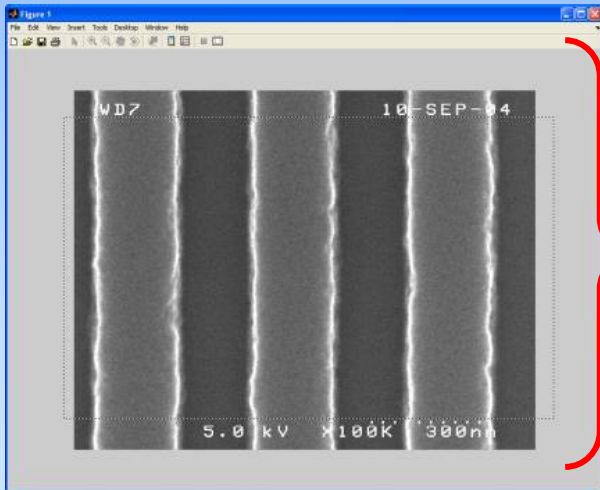
Molecular Material	T _g °C
M16-0	34
M17	37
M18	75?
M19	30 (and maybe a 2 nd at 20 °C)
M20	45 (and maybe a 2 nd at 20 °C)
M21	57
M22	20



M17 resist 100 nm 1 to 1

Achievements II

- Fractal characterization software demo used at INTEL with good results. IMEC and other research centers use it also.
- Demo available
- Invited talk at SEMATECH





Second MINAEAST-NET Workshop, Athens July 15th 2005



NanoPlasma: “Plasma Etching for desired nano-Feature shape and nano-texture: An Advanced Reactor and Simulation Software for Feedback-Loop Plasma Control ”

