

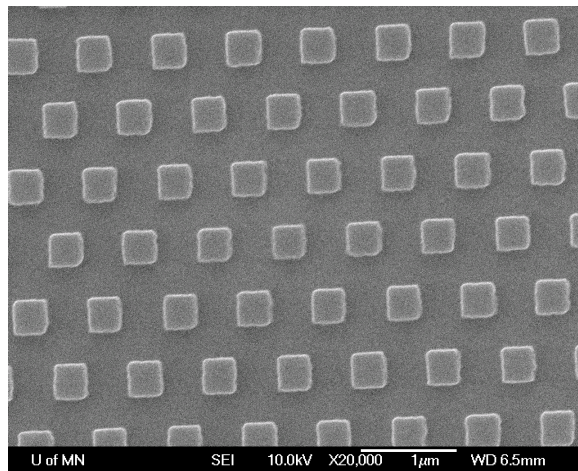
E-beam lithography of Nitride Imprint Stamps

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- Motivation: Stamps for Directed Self-Assembly

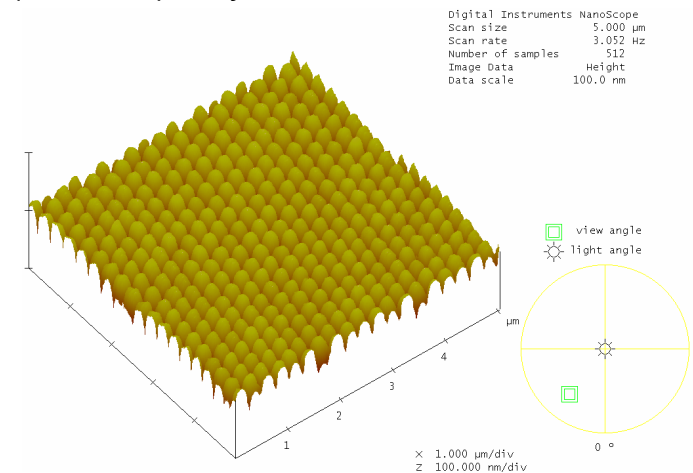
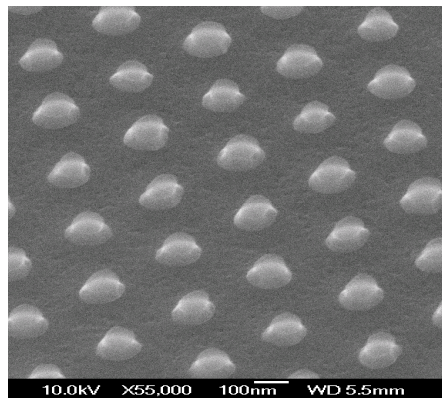
- Self-assembled nanopores in anodic aluminum oxide are limited by their uncontrollable alignment.
- Pores can be directed into an organized pattern after imprints were made on aluminum prior to anodization.



SEM of imprint stamps of various sizes.

- Parameters that affect the size of imprint stamp features:

- **Negative resist:** works best as the imprinting poles can be written directly.
- **Beam current:** increasing gun voltage and aperture size results in less resolution but shorter total exposure time
- **RIE etching:** increasing etching time results in smaller pole sizes (100nm+), but center to center distances (200nm+) stay the same



AFM of 300nm center-to center stamp. (courtesy of Liwen Tan)