Nanopatterning and Assembly of Electronics

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The semiconductor industry will soon be ramping 32nm node based on 193nm lithography. As the scaling of silicon CMOS is approaching to its physical limitations with the current patterning methods used, alternative approaches below 32nm resolution are required. Several emerging patterning techniques are being evaluated, these include self-assembly and bio-assembly methods. DNA based assembly and patterning, use of diblock copolymers and electric field assisted lithography are some of the practices received attention by both academia and industry. Some of these approaches may not replace conventional lithography processes, but may be more conducive to nanoarchitectures such as cellular, bio-insipired, magnetic dot logic and crossbar architectures. This talk will summarize and present some of the recent advances in this area that are specifically investigated within FCRP/FENA center.