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Nanoscale devices on thin films by ultra-high-resolution lithography MICHAEL FISCHBEIN, University of Pennsylvania, MARIJA DRNDIC, University of Pennsylvania — It is possible to achieve exceptionally high resolution with lithographic techniques that use scanning and transmission electron beams by using a thin film as a substrate. With this approach, numerous structures such as nanowires, nanorings, nanogaps and quantum dots can be made with dimensions under ten nanometers and in some cases even less than one nanometer. The flexibility of this fabrication approach also allows these extremely small structures to be easily contacted by large electrodes and therefore integrated into full electronic devices that exhibit effects due to carrier confinement. Furthermore, because these devices are on thin films, they are compatible with imaging by transmission electron microscopy (TEM). Basic devices made with this approach will be introduced. Extensions to devices with more complicated geometries and those which also include non-lithographically prepared nanostructures will be discussed as well. *This work was supported by ONR (N000140410489), NSF (DMR-0449553), NSF MRSEC (DMR00-79909) and NSF-IGERT (DGE 022166).

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