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**Strain-based self assembly of nanostructures for non-destructive large-scale integration** E. V. MOISEEVA, Y. M. SENOUSY, C. K. HARNETT, University of Louisville — New types of curved nanostructures, departing from the plane of the substrate yet integrated with microscale contact pads, may be formed by using a strain-based assembly method. This process relies on the strain mismatch between thin films in a bilayer (in our case, metal/insulator or two different metals). By incorporating conducting and insulating materials, this method will be able to integrate active electromechanical micro- and nanostructures into microdevices, such as steerable antenna arrays, thermal nanoactuators, strain-sensitive inductors, electromagnetically resonant metamaterials, and bistable nanomechanical switches. "Top-down" lithography and the highly selective $XeF_2$silicon dry etching process are used to obtain our released structures. The strain-based assembly technique requires no alignment step for combining nanostructures with large features, including electrical contacts and other interconnects with the outside world. We will discuss the prospects and limits for obtaining smaller thickness dimensions and lateral dimensions through electron beam lithography.

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