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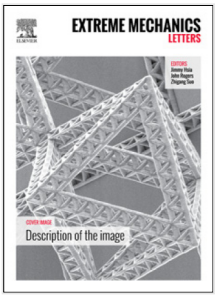

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Stress anisotropy controlled morphological evolution in core-shell nanowires

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Abstract

Stress anisotropy guided controllable morphologies in core-shell nanowires are investigated by linear stability analyses and three dimensional dynamic simulations. Our results reveal that various morphologies including nanoring array, helically ordered quantum dots, and longitudinally oriented quantum wire array on the nanowire substrate can be obtained by tuning the stress anisotropy via applied stress to the nanowire. In the presence of elastic anisotropy regulating the orientation of the core-shell nanowire is another efficient way toward growth of ordered morphologies. Our studies demonstrate the possibility of stress anisotropy tailoring self-organized morphologies in core-shell nanostructures.

Keywords: surface instability, diffusion, stress anisotropy, nanowire,

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