

## **Morphological evolution of Au nanowires controlled by Rayleigh instability**

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A sound knowledge and understanding of the thermal stability of nanowires is a prerequisite for the reliable implementation of nanowire-based devices. We investigate the morphology of Au nanowires annealed isothermally at different temperatures. During the processes, triggered by heating, the wires undergo various configurational changes to finally break up into chains of nanospheres at much lower than bulk melting temperatures due to capillary or so-called Rayleigh instability. The role of three parameters, namely, wire diameter, temperature, and annealing time, on the final morphology is investigated. Both the average sphere diameter and the mean spacing between adjacent spheres are larger than the values predicted for materials with isotropic surface energy. Possible reasons are discussed in the paper.