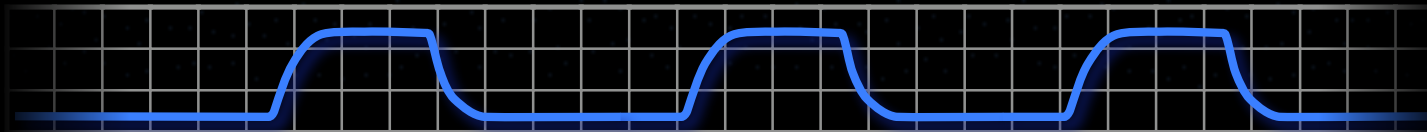


# Size matters

The growth of nanowires from  $\text{Si}_x\text{Ge}_{1-x}$  alloys or as alternating Si /  $\text{Si}_x\text{Ge}_{1-x}$  “heterostructures” changes markedly as the wire diameter enters the nanoscale.

For nanowires less than 50 nm across, the surface energy of the catalyst particle at the end strongly affects the growth rate and composition of the wire.

Fortunately, the interface between Si and  $\text{Si}_x\text{Ge}_{1-x}$  segments becomes sharper as the wire narrows: its width is set by the time needed to deplete and “restock” the tiny catalyst particle with the alternating semiconductor feedstocks.



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