

Lazarevicite-type short-range ordering in ternary III-V

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Stabilizing ordering instead of randomness in alloy semiconductor materials is a powerful means to change their physical properties. We used STM and TEM to reveal an unrecognized ordering in ternary III-V materials. The lazarevicite short-range order, found in the shell of $\text{InAs}_{1-x}\text{Sb}_x$ nanowires, is driven by the strong Sb-Sb repulsion along $\langle 110 \rangle$ atomic chains during their incorporation on unreconstructed $\{110\}$ sidewalls. Its spontaneous formation under group-III rich conditions of growth offers the prospect to broaden the limited classes of ordered structures occurring in III-V semiconductor alloys.