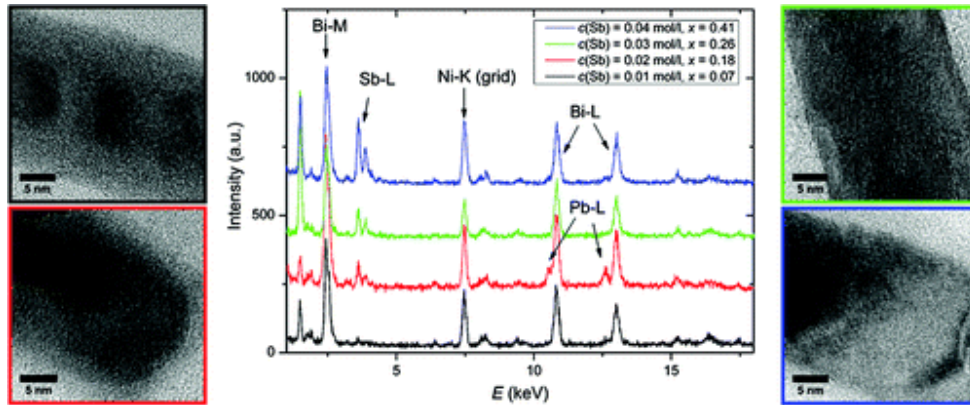


Electrochemical Synthesis of $\text{Bi}_{1-x}\text{Sb}_x$ Nanowires with Simultaneous Control on Size, Composition, and Surface Roughness

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We present the synthesis of $\text{Bi}_{1-x}\text{Sb}_x$ nanowires with controlled composition between $x = 0.05$ and $x = 0.40$ over a wide range of diameters (20–100 nm) interesting for the investigation of the enhancement of thermoelectric efficiency via quantum size effects. We find that the relative concentration of Bi and Sb ions in the electrolyte, together with the deposition potential, determines the resulting nanowire composition. Morphology and composition were analyzed using X-ray diffraction, electron microscopy, and energy dispersive X-ray analysis. Two different templates were fabricated to enable the synthesis of nanowires with smooth and rough contour.