Solvothermal Formation of Free- Standing Magnetic FePt Alloy Nanowires

Zheng Gai[1], Zongtao Zhang[2], Douglas A. Blom,[2] James R. Thompson,[1] Sheng Dai [2], and Jian Shen[1]

[1]Condensed Matter Sciences Division, and [2]Chemical Sciences Division,
Oak Ridge National Laboratory, Oak Ridge, TN 37831

The preparation of free-standing magnetic nanowires in high yield remains to be a challenge so far. Solvothermal synthesis is one of the most powerful strategies employed for the crystallization of many unique compounds. We report the successful solvothermal synthesis of ferromagnetic FePt alloy nanowires. The length along the longitudinal axis of the wires extend up to several microns, while the average diameter can be tuned from 10 to 50 nm by crystallization temperature and time. The magnetic properties of the Fe48Pt52 nanowires have been measured by a superconducting quantum interference device (SQUID) magnetometer, the Curie temperature of the Fe48Pt52 nanowires is well above room temperature. We expect that this synthesis method will lead to new opportunities to grow 1D and other morphologically interesting nano-scaled materials through controlled restructuring of the precipitators that are generated in-situ by solvothermal treatment.

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