

Abstract Submitted  
for the TSF05 Meeting of  
The American Physical Society

**Crystallography of metallic nanowires fabricated by hydraulic pressure injection** ZHIPING LUO, Texas A&M University — Metallic nanowires have exhibited enhanced mechanical and physical properties over the bulk samples. In order to link the fabrication process and their properties, knowledge of the crystallography of the nanowires is essential. In this work, by means of transmission electron microscopy (TEM) techniques, crystallographic studies have been performed on the metallic tin (Sn) and bismuth (Bi) nanowires prepared by hydraulic pressure injection method. These wires have size range from 15 - 60 nm in average diameter and up to 10  $\mu\text{m}$  in length. Electron diffraction experiment showed that most of these wires are single crystals, with preferred crystallographic growing directions. The Sn nanowires were found to have body-centered tetragonal (bct) structure, and their lengths were predominantly along its  $\langle 100 \rangle$  direction. On the other hand, the Bi had a rhombohedral structure, which was slightly distorted from a face-centered cubic structure along the  $\langle 111 \rangle$  direction. Interestingly, the Bi nanowires grew not along its rhombohedral axis but along its pseudo cubic axis directions. Possible growth mechanisms will be discussed.

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Date submitted: 22 Sep 2005

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