

Electronic Supplementary Information (ESI)

**Phase diagram and structural evolution of tin/indium (Sn/In) nanosolder particles:
from a non-equilibrium state to an equilibrium state**

Yang Shu^a, Teiichi Ando^b, Qiyue Yin^c, Guangwen Zhou^c, and Zhiyong Gu^{a,*}

- a. Department of Chemical Engineering, University of Massachusetts Lowell,
One University Ave, Lowell, MA 01854, USA. Email: Zhiyong_Gu@uml.edu
- b. Department of Mechanical and Industrial Engineering, Northeastern University,
360 Huntington Ave, Boston, MA 02115, USA
- c. Department of Mechanical Engineering & Multidisciplinary Program in Materials Science
and Engineering, State University of New York, Binghamton, 4400 Vestal Parkway East,
Binghamton, NY 13902, USA

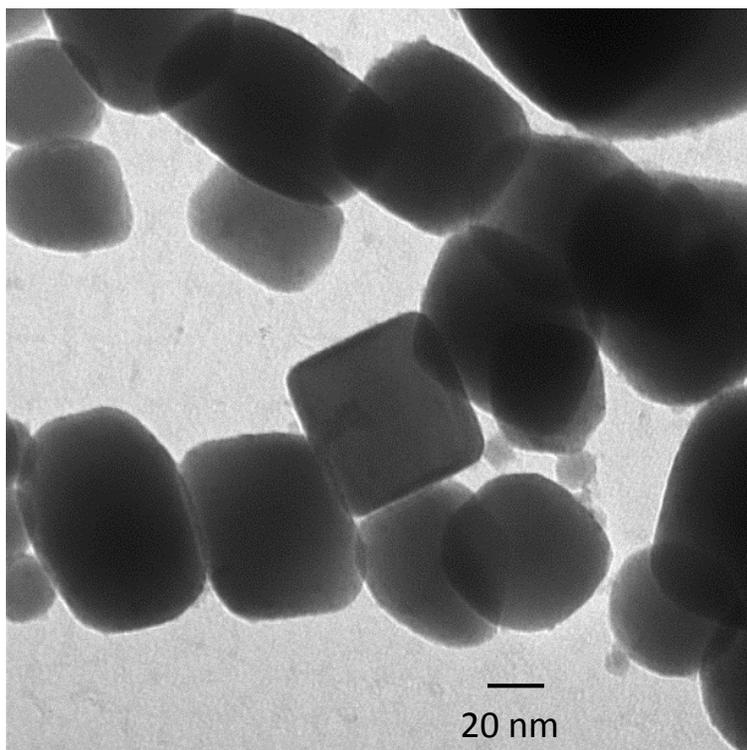


Fig. S-1: TEM image of Sn/In 50/50 nanosolder particles; the size range of the nanoparticles is from 38 nm to 60 nm.

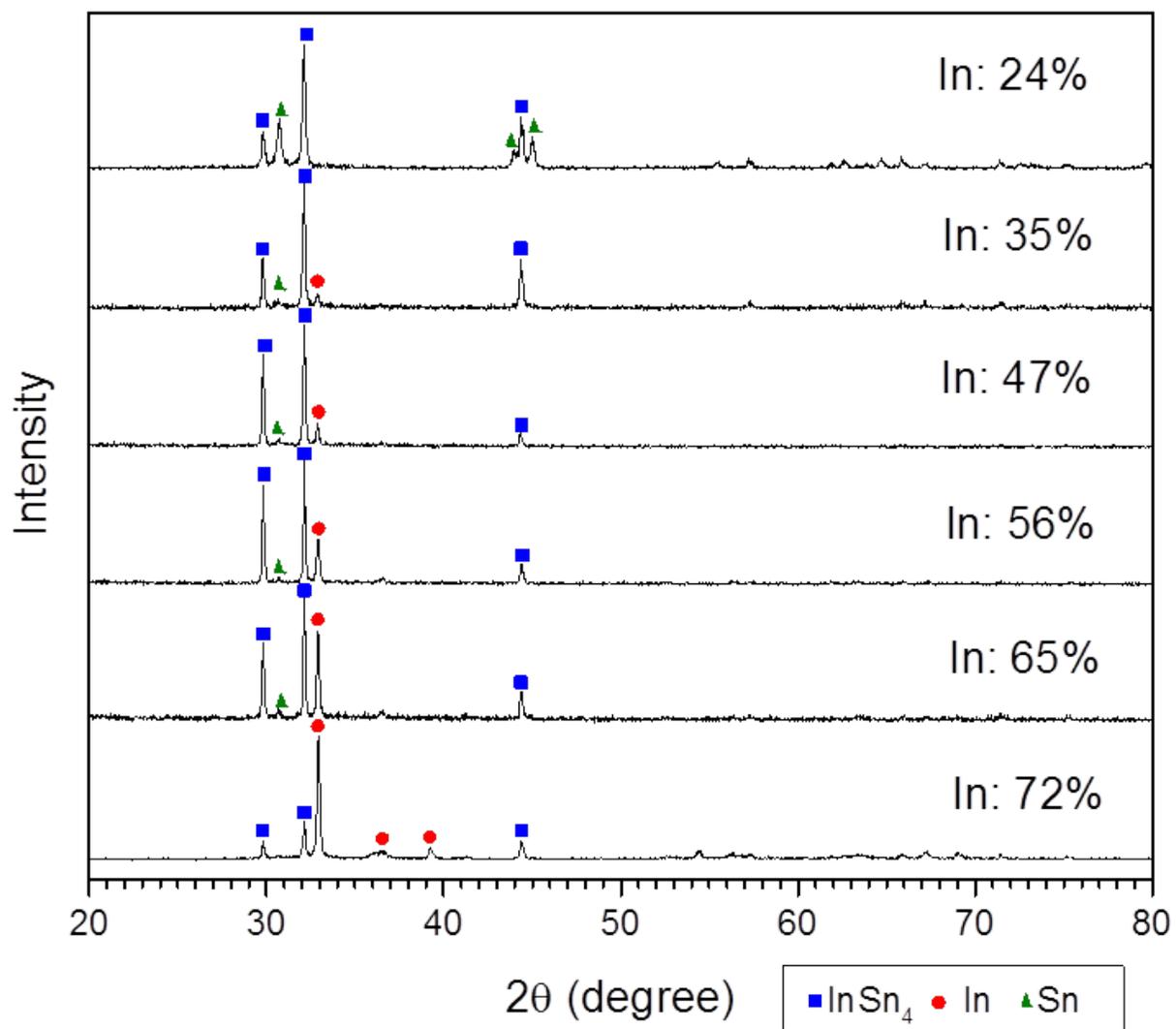


Fig. S-2: XRD spectra of the as-synthesized Sn/In nanosolder particles at different indium compositions.^[1]

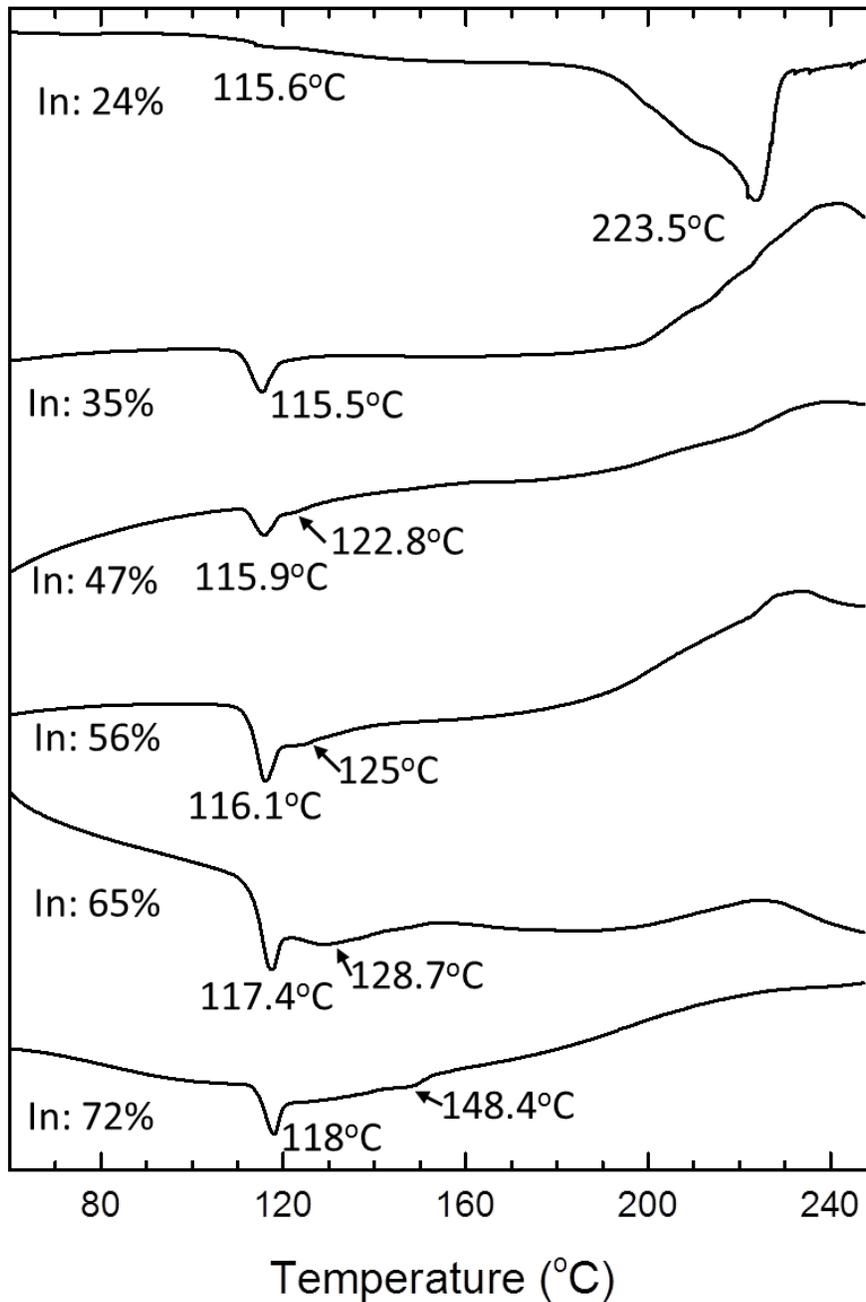


Fig. S-3: DSC curves of the as-synthesized Sn/In nanosolder particles at different indium compositions. ^[1]

Reference:

1. Y. Shu, K. Rajathurai, F. Gao, Q. Cui, Z. Gu. "Synthesis and Thermal Properties of Low Melting Temperature Tin/Indium (Sn/In) Lead-free Nanosolders and Their Melting Behavior in a Vapor Flux", *Journal of Alloys and Compounds* 2015, 626, 391-400.