Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Surface Demixing in a AuSn Liquid Alloy[1] VENKAT BALAGURUSAMY, REINHARD STREITEL, OLEG SHPYRKO*, PETER PERSHAN, DEAS and Physics Dept, Harvard University, Cambridge, MA 02138, BEN OCKO, Brookhaven National Laboratory, Upton, NY 11973, MOSHE DEUTSCH, Bar-Ilan University, Ramat-Gan 52900, Israel — We present results of X-ray reflectivity studies of the eutectic AuSn alloy liquid-vapor interface. The analysis shows that in common with the BiSn eutectic, there is surface demixing that extends to more than one monolayer. This is in contrast to a common presumption that the Gibbs adsorption predicts complete demixing only in the surface monolayer. The composition profiles can be explained by surface segregation theory for attractive interaction between Sn and Au atoms, similar to BiIn [1] and BiSn [2].
[1] E. DiMasi, H. Tostmann, O. G. Shpyrko, P. Huber, B. M. Ocko, P. S. Pershan, M. Deutsch, and L. E. Berman, Phys. Rev. Lett. **86**, 1538 (2001)
[2] O. G. Shpyrko, A. Y. Grigoriev, R. Streitel, D. Pontoni, P. S. Pershan, M. Deutsch, and B. M. Ocko, Phys. Rev. Lett. **95**, 106103 (2005)
*Present address: Center for Nanoscale Materials, ANL

[1]Synchrotron measurements performed at ChemMatCARS, Advanced Photon Source, ANL and supported by DOE grants DE-FG02-88-ER45379 and DE-AC02-98-CH10886

Reinhard Streitel
DEAS and Physics Dept, Harvard University

Date submitted: 21 Dec 2005 Electronic form version 1.4