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Size Distribution of Nano-Crystallites in Non-Crystalline Binary Alloys YONG W. KIM, Lehigh University, ANDREW ABRAHAM, Moravian College, JERRY KIM, UCLA — The factors that affect thermophysical property determination for non-crystalline metallic alloys include non-uniformities in compositional and morphological property within a specimen. A series of measurements have shown that a specimen's thermal history leads to a spatial profile of elemental composition that differ from one specimen to another for the same alloy.(See Y.W. Kim, *Int. J. Thermophysics* **28,** 732 (2007), and references therein.) In order to develop a theoretical model for temperature dependence of thermophysical properties, we consider thermal dissociation of nano-crystallites within a randomly close-packed (RCP) medium. Once the size distribution of the nano-crystallites has been established at a given temperature, a set of coupled dissociation equations can be solved at all other temperatures. Transport properties can then be computed over a range of temperature. In this paper we present the size distribution of crystallites in a bed of RCP spheres. Two different size spheres are mixed at several compositions to simulate non-crystalline binary alloys in 2-D. The distribution is found to be peaked at a crystallite size specific to a given alloy composition. This work is support in part by the NSF-DMR(Metals).

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