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**The effect of bismuth on microstructure evolution of ultrafine grained copper**A. Kosinova<sup>1</sup>, B.B. Straumal<sup>2,3,4\*</sup>, A.R. Kilmametov<sup>2</sup>, E. Rabkin<sup>1</sup>

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**Abstract:** The effect of bismuth on the microstructure evolution of ultrafine grained copper at elevated temperatures has been studied. Ultrafine grained copper polycrystals were produced employing the High-Pressure Torsion technique. Bismuth had little effect on kinetics of recrystallization and grain growth of as-processed copper. Bi-rich intergranular films at the grain boundaries were observed in the samples annealed between 700 and 900 °C. Complete wetting of the grain boundary triple junctions by the Bi-rich liquid phase was observed at the temperatures below the onset of complete grain boundary wetting. We attributed the fact that Bi does not affect the kinetics of grain growth to the abundance of twin boundaries not affected by Bi segregation.

**Keywords:** Nano-Crystalline Metals; Thermodynamics, Kinetics; Grain boundaries; Copper; Bismuth; Grain growth

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