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## **Phase Transitions at Low/Dimensional Defects: Insights from the Tracer Diffusion Measurements**

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Phase equilibria and phase transitions at low-dimensional defects are in focus of an intensive research nowadays. Since these low-dimensional defects (dislocations, triple junctions, low- and high-angle grain boundaries) represent short-circuits for diffusion in metallic materials, tracer diffusion measurements represent a unique tool to discover and probe the phase transitions at defects. Recently, the existence of temperature-induced transitions in the grain boundary structure were revealed by high-precision radiotracer diffusion measurements in low sigma Cu bicrystals [1-3]. Temperature-induced phase transitions were related to an appearance of specific "kinks" in the temperature dependences of the grain boundary diffusivity and the disappearance of grain boundary diffusion anisotropy [3].

Segregation-induced grain boundary phase transitions were investigated in Cu-Bi [4] and Al-Ga systems. Measurements of Ag grain boundary diffusion in the Cu-Bi alloys highlight an intrinsic heterogeneity of the grain boundary phase transitions when the pre-melted and almost segregation-free high-angle grain boundaries co-exist in the polycrystalline Cu-Bi alloy in a broad range of volume concentration of Bi.

Metastable states of grain boundaries, which appear as a result of severe plastic deformation [5] or precipitations in multi-components alloys, are presented and thoroughly examined. Phase decomposition at interfaces in high-entropy alloys probed by tracer diffusion represents a further highlight.

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