

Amorphization of CuZr based alloy powders by mechanical milling

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Abstract. The effect of nickel addition was studied in the CuZr system creating alloys with near eutectic composition. Nickel and aluminum have been regarded as useful elements to improve the plasticity, thermal stability of the CuZr-based amorphous alloys. $\text{Cu}_{49}\text{Zr}_{45}\text{Al}_6$ and $(\text{Cu}_{49}\text{Zr}_{45}\text{Al}_6)_{95}\text{Ni}_5$ were selected because of the good glass-forming ability. After 15 h of milling the structure of the powders was amorphous based on the XRD analysis. By adding nickel, the crystallization temperature (T_x) shifted to higher temperatures compared to CuZrAl alloy. The value of supercooled liquid region was 64 K, which means CuZrAl has a comparatively high glass forming ability.