

Aluminium alloys strengthened with quasicrystalline particles

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Quasicrystalline aluminium based alloys are group of promising materials with high hardness and high strength, also at elevated temperatures. These properties are connected with specific microstructure of the material consisting of small quasicrystalline particles embedded in aluminium solid solution. My studies are focused on developing quasicrystalline alloys based on Al-Mn-Fe system. Main investigations concern the influence of subsequent alloying elements on microstructure and mechanical properties of the alloy produced by the melt spinning technique, as well as thermal stability of the metastable quasicrystalline phase present in the alloy. Aluminium-based alloy strengthened with quasicrystalline particles are designed for the automotive industry and aviation, where light alloys with a very good mechanical properties, capable of operating at elevated temperatures are desirable.