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Complex characterization of ZK60 alloy processed by ECAP**Florina-Diana Dumitru, Mihaela-Andreea Moncea, Marius Viorel Olteanu, Monica Matei and Gyorgy Deak**

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Samples of extruded ZK60 magnesium alloy were subjected to Equal Channel Angular Pressing (ECAP) following route A, with an equivalent strain per pass equal to 1.07. The processing temperature varied from 523 K to 423 K. Deformation-induced grain refinements is enhanced with the number of ECAP passes, therefore after 6 ECAP passes the fine grain size is reduced to 1.79 μm , from an average grain size of 5.75 μm in the starting material. This grain refinement improved the ductility of the processed material determined through tensile tests. The calorimetry analysis highlighted the transformations that occur in the material after the ECAP process. It was determined that the recrystallization temperature of the severely deformed plastic ZK60 depends on the deformation degree, decreasing with the number of passes, but also with the heating rate. From the storage energy determined for each sample, the energy of the defects (dislocations at the boundaries - E_b , dislocations within the grains/subgrains - E_d and the vacancies - E_v) was determined. It was observed that for the ECAPed samples, the E_b and E_d energies have relatively low values, while the E_v presents high values for all the studied passes. The vacancies being the major defects that occur in the ZK60 alloy is processed by ECAP.

Biography

Florina-Diana Dumitru has completed her PhD from the Politehnica University of Bucharest. She is a Researcher of the impact of built environment and Nanomaterials Department at the National Institute for research and development in environmental protection, Romania. She has published more than 20 papers in specialized journals and participated in 7 conferences in the materials science field.

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