Foreword

Symposium on Phase Transformations and Deformation in Magnesium Alloys

Lightweight magnesium alloys have attracted considerable interest in the last 10 years for applications in the automotive, aircraft and electronic industries. However, their application remains limited, compared with their counterpart aluminum alloys, because their mechanical properties and formability are still relatively low. Attempts to improve such properties of existing magnesium alloys and to develop new alloys with better performance have thus far been restricted by a lack of in-depth fundamental understanding on issues such as phase equilibria, solidification and precipitation processes in complex alloy systems, interactions between lattice defects and precipitates, and deformation mechanisms at ambient and elevated temperatures. It was important to have a small symposium designed to tackle such challenging issues. At the 2012 TMS Annual Meeting in Orlando, FL, the TMS Phase Transformations Committee and Magnesium Committee sponsored a 1-day symposium on Phase Transformations and Deformation in Magnesium Alloys. This symposium had two sessions on phase transformations and deformation, and deformation twinning and texture. It had a total of 15 invited presentations and 3 contributed talks, each of which was given by a leading researcher in the field. The aims of this symposium were to examine current understanding on phase transformations and roles of phase transformation products in controlling the deformation behavior of commercially and strategically important magnesium alloys and to provide a platform for rational design of microstructures for better mechanical properties and formability.

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