Automatic Methods in Crystallographic Analysis of Aluminum Materials

Miroslav Cieslar[1, a)], Lucia Bajtošová, Michaela Poková, and Jozef Veselý

[1] *Faculty of Mathematics and Physics, Charles University, Prague, CZ*

[a)] Coresponding author: cieslar@met.mff.cuni.cz

Abstract. Electron back scatter diffraction (EBSD) in scanning electron microscopy (SEM) and automated crystal orientation and phase mapping (ASTAR) in transmission electron microscopy (TEM) are nowadays main tools used in a statistical evaluation of crystal orientations in small volumes. EBSD is based on an analysis of Kikuchi patterns guarantying thus a high angular resolution, however with a limited spatial resolution given by the size of the electron probe in SEM. ASTAR, on the contrary, uses Bragg spot patterns, which are less sensitive to small local misorientations, but with a high spatial resolution characteristic for TEM. An application of both methods in the study of microstructure features of aluminum material are discussed in the contribution.