Comparison of segmentation of 2D and 3D EBSD measurements in polycrystalline materials

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A comparison study of grain segmentation in 2D and 3D electron backscatter diffraction (EBSD) measurements of polycrystalline materials, based on a misorientation threshold, is presented. Using Laguerre tessellations with orientation marks, a simulation study that demonstrates a different sensitivity of segmentation in the case of low angle and high angle grain boundaries is involved. Then two metallic materials measured by 3D EBSD are investigated concerning segmentation, and there are given some recommendations for the misorientation thresholds. Computational tools such as DREAM 3D software enable significant data evaluation that is completed by a five-parameter analysis of grain boundaries.

This is a joint work with Jakub Staněk, Iva Karafiátová and Filip Seitl from Charles University, Jaromír Kopeček and Petr Král from the Academy of Sciences of the Czech Republic.