

# **Tomographic crystallography of dislocations in metals**

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Three dimensional quantitative characterization of dislocation structures is of vital importance to fully understand many dislocation-related dynamic processes in materials science. Our recent years' effort has well promoted the establishment of a novel tomographic crystallography method for dislocation characterization which can simultaneously reveal the geometric, crystallographic and energetic features of dislocations. In this presentation, the recent progress in the improvement of the method will be introduced, and its applications to revealing complicated dislocation structures in a quenched aluminum alloy and a deformed pure aluminum will be presented. The obtained results with good coupling well unveil various characteristics of the dislocation structures, further enlightening us for a better knowledge of dislocation behaviors subjected to thermal and mechanical loadings.