Extracting 3D microstructure from 2D stereology: The average grain boundary network

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The evaluation of stereological approaches to access the grain boundary network in corrosion layers forming on zircaloy cladding is central to the project. Successful implementation of stereological measurements will not only allow highly accelerated data collection but will also yield insight into the details of the corrosion mechanism of cladding materials for the nuclear industry.

We will generate and evaluate a fully synthetic textured microstructure. This microstructure will be evaluated as if it was characterised using EBSD. The EBSD data set will be evaluated using a 3D stereology approach.

In this 10 week summer research project the student has the chance to work with cutting edge 3D modelling/evaluation software (dream3d, MTex, stereology). The ideal candidate has some experience with Matlab/Mtex and is keen to think and work with crystal symmetries and microstructures in 3 dimensions.