

## **COMPETITION OF STRESS CORROSION CRACK BRANCHES OBSERVED IN-SITU USING TIME-LAPSE 3D X-RAY SYNCHROTRON COMPUTED TOMOGRAPHY**

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The progress of a stress corrosion crack in a sensitized AA7075 alloy was studied by in-situ x-ray synchrotron computed tomography. A load was applied to a pre-cracked specimen inside an environmental cell containing moist air and the propagation of the stress corrosion crack was observed. Measurements from the 3D image of the crack have already been shown to provide better quantification compared to observations of the crack from the outer surface. In this paper we study in detail the progress of the stress corrosion crack as it propagates through the material. We reveal how the formation of metal ligaments occurs and the competition of the 'main' crack and its branches. We have visualized these features to show the complexity of the local variation in crack morphology in a way that brings new insight into the interaction of the stress corrosion crack with the microstructure of the material.