Experimental and Numerical Study of Intense Shear Banding for Al-Alloy under Uniaxial Tension

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Abstract. The occurrence of intense shear band is a prelude to failure in many Al-sheet materials. In the present study, a full field optical system measurement technique (digital image correlation) and the finite element method are used to characterize the sequence of deformation in uniaxial tension before and after the intense shear band formation in AA6111-T4. The results indicate good agreement between the measurement and the predictions in terms of shear band width, strain distribution along the gauge length and the failure mode.