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# In-situ bending under tension shear fracture analysis and microstructure “earthquake” of DP780 dual phase steels

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## Abstract

Dual phase (DP) steels consist of hard brittle martensite phase and soft ductile ferrite phase. With a novel bending under tension test system, in-situ symmetrical bending under tension experiments were carried out and photomicrographs of bending surface were recorded. The microstructure “earthquake” of DP780 dual phase steels was observed in the bending under tension process. By analyzing the in-situ images serious, the initiation, coalescence of cavities and propagation of micro-cracks until final fracture were analyzed. The micro-cracks form only in the outside surface of bending radius, and mainly appear near the phase boundary of ferrite and martensite. Micro-cracks coalesce and propagate in the direction perpendicular to the stretching direction approximately, and at the phase boundary of martensite and ferrite. Furthermore, digital image correlation technology was used in this study to analysis the strain distribution between ferrite and martensite during the bending under tension

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