



**Microstructural evolution of friction stir welded SAF 2205 duplex stainless steel**

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**Abstract**

Microstructure evolution of SAF 2205 duplex stainless steel (DSS) was investigated in friction stir welding (FSW) process at welding speed of 50 mm/min and rotational speed of 400 rpm. Microstructural observations were carried out using optical microscopy and scanning electron microscopy equipped with electron back scattered diffraction (EBSD) system. The results showed that grain refinement took place and simple shear texture components developed in each constituent phases of ferrite and austenite in stir zone (SZ). Beside the simple shear texture components, common recrystallization texture components of cube ( $\{001\}\langle 100\rangle$ ), Goss ( $\{011\}\langle 100\rangle$ ), S ( $\{123\}\langle 634\rangle$ ), P ( $\{011\}\langle 122\rangle$ ), and Q ( $\{013\}\langle 231\rangle$ ) were recognized to exist in the austenite phase. These results confirmed the occurrence of the continuous dynamic recrystallization (CDRX) in both phases as well as static recrystallization (SRX) in austenite phase.

Keywords: Stainless steels, Shear texture, Continuous dynamic recrystallization, Static recrystallization.

**1. Introduction**

Duplex stainless steels (DSSs) are considered as a group of stainless steels, usually supplied with a mixed microstructure of approximately equal proportions of austenite and ferrite [1-2].

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