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# Crystallographic Features of Deformation Induced Martensitic Transformation in Fe-Ni-C Steels

Nobuhiro Tsuji\*<sup>1</sup>, Si Gao<sup>1</sup>, and Akinobu Shibata<sup>2</sup>

<sup>1</sup>Kyoto University – Japan

<sup>2</sup>National Institute for Materials Science (NIMS) – Japan

## Abstract

Structural metallic materials are nowadays required to show ultra-high strength for achieving *Carbon Neutral* through making constructions, transportation device, etc. lightweight. At the same time, structural metals should maintain good ductility and toughness in order to guarantee formability, safety, and so on of the matters. Under such a circumstance, the transformation induced plasticity (TRIP) effect caused by deformation induced martensitic transformation has been getting a lot of attention. In the present keynote talk, the author would like to show some experimental results on crystallographic features of deformation induced martensitic transformation in Fe-Ni-C metastable austenitic steels showing martensitic transformation from FCC austenite into BCC (BCT) martensite during tensile deformation. The features introduced include (i) effect of crystallographic orientation of austenite grains on deformation induced martensitic transformation, (ii) variant selections martensite transformed during tensile deformation, and (iii) the effect of austenite grain size on crystallographic feature of deformation induced martensite.

**Keywords:** Steels, Deformation Induced Martensite, Austenite, Tensile Deformation, Variant, Texture

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\*Speaker