



京都大学グローバル COE 講演会

日 時 : 2011 年 1 月 27 日(木) 13:30~15:00

場 所 : 吉田キャンパス 工学部総合校舎 102 教室

Recent Progress on the Processing of Ultra High Strength Steels Treated by Quenching-Partitioning-Tempering

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Demands of high strength construction materials and ecologically-friendly manufacture have seen the significant improvement of advanced steels. Recently, third generation of advanced high strength steels have attracted much attention with emphasis on the lower content of alloying elements and affordable processing cost in addition to the high tensile strength of 1000-1500 MPa and elongation of 15-20%. In this talk, a review on the novel Quenching-Partitioning-Tempering (Q-P-T) treatment developed on the basis of Q-P process is presented. Principles of the chemical composition and microstructure design associated with martensitic transformation for Q-P-T is discussed with some examples to ensure the fine multi-phase microstructure of martensite, retained austenite and carbide precipitation. A 22MnB5 type steel has shown the enhanced mechanical properties associated with finer duplex microstructure by the combination of hot stamping with the quenching and partitioning process. Finally, perspectives of third generation advanced high strength steels will be discussed.

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