8th International Conference on Physical and Numerical Simulation of Materials Processing (ICPNS)

14–17 October 2016

Seattle, Washington | Hosted by Purdue University

SESSION 8: POSTER, GRAND PACIFIC BALLROOM
SUNDAY, OCTOBER 15, 2016

Effects of deformation on recrystallization of the wear-resistant steel

Wang Chun, Tangshan College

ABSTRACT

The dissolution behavior of the second phase particles in ultra-low carbon Nb–Ti microalloyed steel at 1300°C was studied using extraction replica, TEM, and EDX. The results showed that there are two kinds of precipitates in the matrix, one is relatively coarse precipitates with rich Ti formed in the solidification process and the other is fine precipitates with rich Nb formed in the strain-induced process. The strain-induced precipitates are unstable, dissolved at 1300°C, and disappeared after 2 h, while the precipitates formed in the solidification process still exist the Nb–(Nb, Ti) (C, N) composite phase dissolved 48 h. The stability of Nb carbonitride is improved containing Ti steel.

KEYWORDS: ultra-low carbon microalloyed steel, carbonitrides, dissolving, thermal stability