

Effects of Austenitizing Temperature on Tensile and Impact Properties of a Martensitic Stainless Steel Containing Metastable Retained Austenite

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The SADP and EDS are used to distinguish the $M_{23}C_6$ and MC type carbides, as can be seen in Figure S1. The size of the $M_{23}C_6$ carbides is much larger than MC, and the distinction can be used to distinguish the $M_{23}C_6$ and MC in the SEM images.

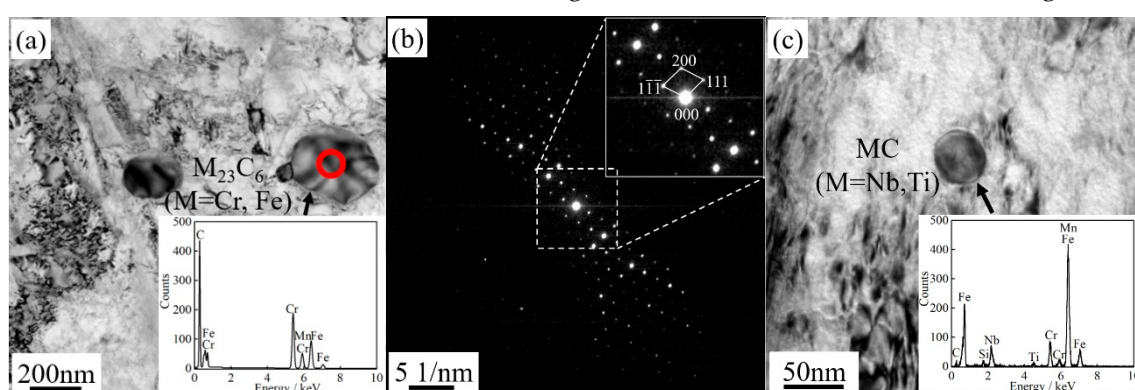


Figure S1. TEM images of (a) $M_{23}C_6$ in 1020-Q; (b) diffraction patterns of $M_{23}C_6$; (c) MC in 1060-Q, where the red annulus represents the selected area of diffraction pattern.

The mole fraction on alloy elements in $M_{23}C_6$ is calculated by Thermo-Calc with the TCFE9 database, as can be seen in Figure S2. The atom ratio of chromium (Cr) and carbon (C) in $M_{23}C_6$ at equilibrium state is approximately 49:20 in the 1000 °C–1040 °C range.

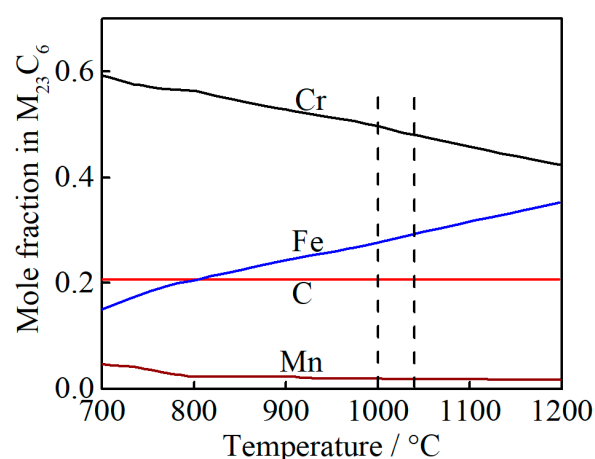


Figure S2. Mole fraction of the alloy elements in $M_{23}C_6$.