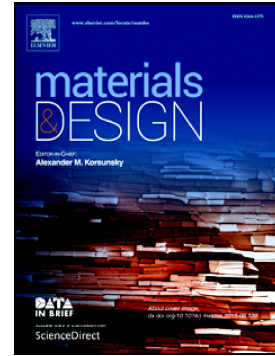


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Kinetics analysis of two-stage austenitization in supermartensitic stainless steel

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Abstract. *The martensite-to-austenite transformation in X4CrNiMo16-5-1 supermartensitic stainless steel was followed in-situ during isochronal heating at 2, 6 and 18 K.min⁻¹ applying energy-dispersive synchrotron X-ray diffraction at the BESSY II facility. Austenitization occurred in two stages, separated by a temperature region in which the transformation was strongly decelerated. The region of limited transformation was more concise and occurred at higher austenite phase fractions and temperatures for higher heating rates. The two-step kinetics was reproduced by kinetics modeling in DICTRA. The model indicates that the austenitization kinetics is governed by Ni-diffusion and that slow transformation kinetics separating the two stages is caused by soft impingement in the martensite phase. Increasing the lath*

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