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## An Experimental Study on the Ordered Alloy Ni<sub>2</sub>Cr\*

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### Abstract

The ordered alloy Ni<sub>2</sub>Cr has been investigated by means of electron diffraction, electron microscopy, calorimetry, resistometry and tensile tests. The formation of the Pt<sub>2</sub>Mo type superstructure is revealed by an electron diffraction study on the single crystalline specimens. The size of ordered domains is of the order of magnitude of several hundred Å even in the well annealed state. The so-called 'K-state' which is characterized by the initial increase in electrical resistivity upon isothermal annealing is attributed to the existence of very fine ordered domains. Superdislocations consisting of triple dislocations are sometimes observed in various stages of ordering, and the mechanical properties are briefly discussed in the light of electron microscopic observation. The energy and entropy of transformation are evaluated as about 1.0 kcal/g·atom and 1.2 cal/g·atom-deg on the alloy of 32.1 at% Cr annealed at 500°C for about 3000 hr.

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