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Long-Period Ordered Structures in the Quasi-Binary Co$_3$V-Ni$_3$V Alloy*

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Abstract

A series of long-period superstructures have been found in the quasi-binary Co$_3$V-Ni$_3$V system. These structures are specified by the stacking sequence of close-packed planes and the atomic order within the planes, and appear successively in the order $\overline{3}3T$ (Co$_3$V), $\overline{2}1\overline{3}T$, $\overline{1}1T$, $\overline{1}11R$, $\overline{1}1TR2$, $\overline{1}1R$, $\overline{3}13R$, $\overline{3}3R$ and $\overline{1}0R$ (Ni$_3$V) with the increase of nickel concentration. The stabilization of the long-period structures is discussed briefly in terms of oscillatory interatomic potentials.