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# A 12R Long-period Stacking-ordered Structure in a Mg-Ni-Y Alloy

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A hitherto unreported long-period stacking-ordered (LPSO) phase, designated 12R, was observed in a Mg<sub>80</sub>Ni<sub>5</sub>Y<sub>15</sub> (at.%) alloy. Microstructure was investigated by electron diffraction and high-angle annular dark-field scanning transmission electron microscopy. Results show that the 12R has a trigonal lattice ( $a = b = 1.112$  nm,  $c = 3.126$  nm,  $\alpha = \beta = 90^\circ$ , and  $\gamma = 120^\circ$ ). Unit cell of the 12R is consisted of three ABCA-type building blocks and each building block contained dominant Ni<sub>6</sub>Y<sub>8</sub>-type building clusters. A sound structural model is proposed based on relative positions of Ni<sub>6</sub>Y<sub>8</sub> clusters in neighboring building blocks.

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