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Authors: Cheng Liu, Yuman Zhu, Qun Luo, Bin Liu, Qinfen

Gu, Qian Li

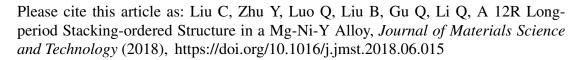
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## ACCEPTED MANUSCRIPT

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

Cheng Liu <sup>a, 1</sup>, Yuman Zhu <sup>b, 1</sup> Qun Luo <sup>a</sup>, Bin Liu <sup>a</sup>, Qinfen Gu <sup>c</sup>, Qian Li <sup>a, \*</sup>

<sup>a</sup> State Key Laboratory of Advanced Special Steels & Shanghai Key Laboratory of Advanced Ferrometallurgy & School of Materials Science and Engineering & Shanghai Institute of Materials Genome &Materials Genome Institute, Shanghai University, Shanghai 200444, China

<sup>b</sup> Department of Materials Science and Engineering, Monash University, Victoria, 3800, Australia

<sup>c</sup> Australian Synchrotron, Clayton 3168, Australia

\*Corresponding author. Prof. Q.Li; Tel: 021-66135659; Fax: 021-66135659.

E-mail address: shuliqian@shu.edu.cn (Q. Li).

<sup>1</sup>These authors contributed equally to this work.

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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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