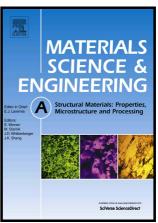
## Author's Accepted Manuscript

Enhanced Coarsening Resistance of Q-phase in Aluminum alloys by the addition of Slow Diffusing Solutes

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### **ACCEPTED MANUSCRIPT**

Enhanced Coarsening Resistance of *Q*-phase in Aluminum alloys by the addition of Slow Diffusing Solutes

Kyoungdoc Kim<sup>a</sup>, Andrew Bobel<sup>a, b</sup>, Sung-Il Baik<sup>a, c</sup>, Mike Walker<sup>b</sup>, P.W. Voorhees<sup>a</sup>, G.B. Olson<sup>a, \*</sup>

<sup>a</sup>Department of Materials Science and Engineering, Northwestern University, Evanston,
Illinois 60208, United States

<sup>b</sup>General Motors, Warren Technical Center, Warren, Michigan 48093, United States
<sup>c</sup>Northwestern University Center for Atom-Probe Tomography (NUCAPT), Evanston,
Illinois 60208, United States

\*Email: g-olson@northwestern.edu

#### Abstract

Here, we design thermally stable microstructures of Al<sub>3</sub>Cu<sub>2</sub>Mg<sub>9</sub>Si<sub>7</sub> (*Q*) precipitates based on commercial aluminum alloy (AS7GU) for automotive applications utilizing low-diffusivity solutes in aluminum. We find that the newly developed alloys show a ~20 % enhancement in mechanical properties at 300°C compared to the baseline AS7GU alloy.

**Keywords:** Aluminum alloys; *Q*-phase precipitates; Coarsening; Mechanical strength; Transmission-electron microscopy (TEM); Atom-probe tomography (APT);

#### 1. Introduction

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