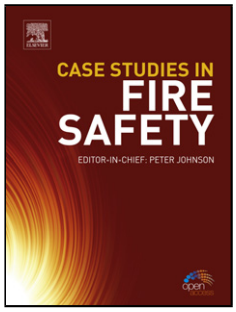

Title: Influence of phase dissolution and hydrogen absorption on the stress corrosion cracking behavior of Mg-7%Gd-5%Y-1%Nd-0.5%Zr alloy in 3.5 wt.% NaCl solution

Authors: S.D. Wang, D.K. Xu, B.J. Wang, L.Y. Sheng, Y.X. Qiao, E.H. Han, C. Dong

PII: S0010-938X(17)31434-8
DOI: https://doi.org/10.1016/j.corsci.2018.07.019
Reference: CS 7618

To appear in:

Received date: 6-8-2017
Revised date: 17-7-2018
Accepted date: 17-7-2018

Please cite this article as: Wang SD, Xu DK, Wang BJ, Sheng LY, Qiao YX, Han EH, Dong C, Influence of phase dissolution and hydrogen absorption on the stress corrosion cracking behavior of Mg-7%Gd-5%Y-1%Nd-0.5%Zr alloy in 3.5 wt.% NaCl solution, *Corrosion Science* (2018), https://doi.org/10.1016/j.corsci.2018.07.019

Influence of phase dissolution and hydrogen absorption on the stress corrosion cracking behavior of Mg-7%Gd-5%Y-1%Nd-0.5%Zr alloy in 3.5 wt.% NaCl solution

S.D. Wang[1,2,3], D.K. Xu[*,1], B.J. Wang[4], L.Y. Sheng[5], Y.X. Qiao[6], E.H. Han[1], C. Dong[3]

[1] Key Laboratory of Nuclear Materials and Safety Assessment, Institute of Metal Research, Chinese Academy of Sciences, 62 Wencui Road, Shenyang 110016, China
[2] Department of Chemical and Materials Engineering, University of Alberta, Edmonton, Alberta T6G 1H9, Canada
[3] Laboratory of Materials Modification by Laser, Electron and Ion Beams, School of Materials Science and Engineering, Dalian University of Technology, Dalian 116024, China
[4] School of Environmental and Chemical Engineering, Shenyang Ligong University, Shenyang 110159, China
[5] Peking University, Shenzhen Institute, Shenzhen Key Lab Human Tissue Regenerate & Repair, Shenzhen 518057, China
[6] Jiangsu University of Science & Technology, Zhenjiang 212003, China

Corresponding author: Dr. Daokui Xu

E-mail address: dkxu@imr.ac.cn (D.K. Xu)

Postal address: Key Laboratory of Nuclear Materials and Safety Assessment, Institute of Metal Research, Chinese Academy of Sciences, 62 Wencui Road, Shenyang 110016, China

Telephone No: +86 24 23915897

Fax No: +86 24 23894149

Highlights:

- Phase dissolution reduces the effect of hydrogen embrittlement on SCC resistance.
- Stress corrosion cracking modes are related to phase dissolution.
- Cathodic charging decreases corrosion resistance of as-cast Mg-Gd-Y-Nd-Zr alloy.