第六届中挪轻合金及新能源国际研讨会

THE SIXTH CHINESE–NORWEGIAN SYMPOSIUM ON LIGHT METALS & NEW ENERGY

CNS 2017
6th Chinese Norwegian Symposium on Light Metals & New Energy
Shanghai, China




December 3-5, 2017, Shanghai, China

Sponsored by:
Shanghai Jiao Tong University (SJTU), China
Norwegian University of Science and Technology (NTNU), Norway

Co-sponsored by:
Chongqing University (CQU)
National Natural Science Foundation of China (NSFC)
Research Council of Norway (RCN)
Jiangsu University (JSU), Zhenjiang, China
SINTEF, Norway

Organiser:
The Joint Research Center between SJTU and NTNU
The Joint Research Center between CQU and NTNU

Shanghai Jiao Tong University

Norwegian University of Science and Technology

Chongqing University

National Natural Science Foundation of China

Research Council of Norway

SINTEF

Jiangsu University

A list of poster exhibitions for CNS6

Dec. 4, Monday, Aisle of the 3rd floor, New Upper House（新上院三楼走廊）

P01. **Prof. Ding Chen**, Hunan Univ., imr99@163.com,
The ignition and flammability of high Ca/Al ratio extruded Mg-Al-Ca-Mn alloys with excellent mechanical properties

P02. **Dr. Lingling Tang**, Jiangsu Univ., lingty523@126.com,
Microstructure evolution and thermal stability of nanocrystalline Mg-Gd-Y-Zr alloy processed by high-pressure torsion

P03. **Dr. Huan Liu**, Hohai Univ., liuhuanseu@hhu.edu.cn,
Refining mechanism of 18R and 14H LPSO phases and its impact on dynamic recrystallization behavior of Mg-Y-Zn alloys during severe plastic deformation

P04. **Boyang Wen**, Chongqing Univ., 2523463077@qq.com,
First-principles study of the properties of Cu or Zn doped Al-Mg-Si aluminum alloys

P05. **Yongjuan Shi**, Shanghai Jiao Tong Univ., shiyongjuan@sjtu.edu.cn,
In vitro and in vivo degradation of a double-layer drug-eluting Mg-Nd-Zn-Zr alloy stent

P06. **Jinxue Liu**, Beijing University of Technology, kimlyo@emails.bjut.edu.cn,
The high stretch formability of the as-rolled Mg-Zn alloys with trace addition of Er at ambient temperature

P07. **Nannan Li**, Beijing University of Technology, linannan@emails.bjut.edu.cn,
Hot deformation behavior and processing map of Mg-10Gd-2Er-0.5Zn-0.6Zr alloy

P08. **Xiaobing Zheng**, Beijing University of Technology, zxb226@emails.bjut.edu.cn,
Microstructure evolution and mechanical properties of the Mg-Gd-Er-Zr alloy

P09. **Ruijing Li**, Beijing University of Technology, li_ruijing@163.com,
Creep behavior of the as-extruded Mg-8Gd-1Er-0.5Zr alloy

P10. **Qi Li**, Central South Univ., 854115065@qq.com,
Effect of lithium on the discharge and corrosion behavior of Mg-3 wt.% Al alloy as the anode for seawater activated battery

P11. **Xiong Zheng**, Hunan Univ., zhengx14@163.com,
The influence of Mg/Si ratio on the negative natural aging effect in Al–Mg–Si–Cu alloys

P12. **Asso. Prof. Zhixin Ba**, Nanjing Ins. Tech., bzhx@njit.edu.cn,
Effects of Sr ion implantation on surface mechanical properties and corrosion resistance of pure magnesium

P13. **Tao Cheng**, Chongqing Univ., 20150913107@cqu.edu.cn,
The effects of Sn and In addition on natural aging and artificial aging of Al-Mg-Si alloys

P14. **Ruojin Zang**, Chongqing Univ., 1369483570@qq.com,
The comparison of the improved Mg-rich high-Cu alloy and the AA6022 alloy

P15. **Zhidong Zhang**, Chongqing Univ., zzd428@qq.com,
Microstructure and mechanical properties of AA6016 aluminum alloy resistance spot welds

P16. **Chenxi Chen**, Shanghai Jiao Tong Univ., ccx@sjtu.edu.cn,
Finite element shape optimization for a biodegradable magnesium alloy coronary stent

P17. **Dr. Yuna Wu**, Hohai Univ., wuyu_na@126.com,
Size effect of Si particles on the microstructure and mechanical properties of high-silic aluminum alloys during hot deformation

P18. **Dr. Yuchun Yuan**, Hohai Univ., ycyuan@hhu.edu.cn,
Effect of Equal Channel Angular Pressing process on Stress corrosion cracking behavior AZ31 magnesium alloy

P19. **Prof. Zili Liu**, Nanjing Univ. Aeronautics & Astronautics, liuzili@nuaa.edu.cn,
Effect of Zn additions on the microstructure and properties of T6 heat treated AM60-2%I magnesium alloy

P20. **Shijie Guo**, Chinalco Material Applications Research Institute Co.LTD, guo_sj@sinr.cn,
Study on the anodic oxidation surface defects of aluminium alloys used for mobile pho Shells

P21. **Zhenwei Zhang**, Kunming University of Science and Technology, 422854000@qq.com,
The research of grain refinement mechanism of ultrafine-grained aluminum alloy process by cyclic equal channel compression

P22. **Jarle Hjelen**, NTNU, jarle.hjelen@ntnu.no,
Stitching of large areas distortion corrected EBSD maps

P23. **Prof. Guosong Wu**, Hohai Univ., wuguosong@hhu.edu.cn,
Degradation Control of Magnesium Alloys for Biomedical and Environmental Applications

P24. **Dr. Bin Chen**, SJTU, steelboy@sjtu.edu.cn,
Atomic-scale HAADF-STEM investigation of Mg-Gd-Y-Zn-Zr alloy

P25. **Lu Wang**, CQU, wanglu@cqu.edu.cn,
Effect of heating rate on microstructure and texture of cold-rolled AA7085 sheet

P26. **Ting Yuan**, Hohai Univ., rabbityt@163.com,
Improving both strength and ductility of Al-Mg-Li alloy through equal channel angu pressing

P27. **Prof. Runxia Li**, Shenyang Univ. Tech., 5327368@qq.com,
Effect of deep cryogenic treatment on microstructure and properties of electromagnetic stir AZ91 magnesium alloy

P28. **Yin Ye**, Chongqing Univ., 1315105083@qq.com,
The Influence of Microstructure on the Fracture Resistance of 6xxx alloy Sheet

P23. Degradation Control of Magnesium Alloys for Biomedical and Environmental Applications

Guosong Wu[1, 2,*], Hongqing Feng[2], Guangyin Yuan[3], Paul K. Chu[2]

1. Hohai University, Nanjing, China
2. City University of Hong Kong, Hong Kong, China
3. Shanghai Jiao Tong University, Shanghai, China

Abstract: Magnesium alloys have been considered potential biomaterials due to their unique biodegradation and low Young's modulus similar to that of human bones. Unfortunately, their biodegradation rate, especially in the initial stage, is not acceptable in biomedical applications. Therefore, it is imperative to search an approach to mitigate their degradation in the initial stage for ensuing tissue growth. In our study, magnesium alloys are modified by C_2H_2 plasma immersion ion implantation and deposition (PIII&D). After the treatment, a thin diamond-like carbon (DLC) film can be successfully formed on the surface to improve the corrosion resistance. Recently, it has been found that the inherent antibacterial ability of magnesium alloys is closely related to their corrosion. Therefore, in addition to the control of degradation, PIII&D modified Mg alloys have an unusual anti-bacteria behavior that is attributed to the combined effects of favorable bacteria adhesion on the DLC surface and local release of hydroxyl and magnesium ions from the substrate *via* defects in the film. Now, owing to the increasing use of Mg alloys in the aerospace, automotive, and biomedical industry, more Mg-based wastes are being generated. Here, a new strategy is proposed to turn Mg wastes into useful extraction agents to lessen the environmental impact.

Key words: Magnesium alloys; Degradation; Diamond-like carbon; Antibacterial ability; Sewage treatment

Corresponding author: Guosong Wu; E-mail: wuguosong@hhu.edu.cn