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Fe-based metallic Glass Catalyst with Nanoporous Surface for Azo Dye degradation

Z. Deng[a,b #], X.H. Zhang[c,a#], K. C. Chan[a*], L. Liu[b], T. Li[b]

a. Advanced Manufacturing Technology Research Centre, Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Hong Kong

b. State Key Lab for Materials Processing and Die & Mould Technology, School of Materials Science and Engineering, Huazhong University of Science and Technology, Wuhan 430074, China

c. Jiangsu Key Laboratory of Advanced Metallic Materials, School of Materials Science and Engineering, Southeast University, Nanjing 211189, China,

[#] These authors contributed equally to the work

[*] Corresponding author

Abstract

In this work, porous structures were introduced to the surface of Fe-based metallic glass ribbons for the first time by chemical treatment in order to increase the catalytic activity in the degradation of azo dyes. The results show that etching treatment in an HF solution with a volume concentration of 20 % for 40 min leads to a porous structure on the Fe-Si-B-Nb metallic glass with a dramatic increase in the specific surface area by 25 times. The much higher specific surface area of the porous ribbons greatly improves the catalytic activity in the degradation of Direct Blue 15 when compared with as-spun metallic ribbons.

Keywords: Nanoporous surface; Fe-based metallic glasses; Catalytic properties; Azo