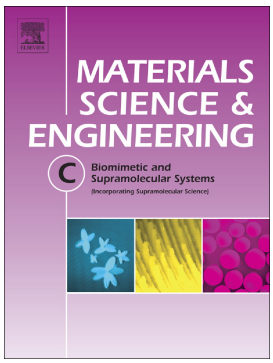

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Jiwei Li, Jianwei Ma, Shaojuan Chen, Yudong Huang, Jinmei He

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Adsorption of lysozyme by alginate/graphene oxide composite beads with enhanced stability and mechanical property

Jiwei Li[a,b,c], Jianwei Ma[a], Shaojuan Chen[a], Yudong Huang[b,c], Jinmei He[b,c*]

[a] *College of Textiles and Clothing, Qingdao University,Qingdao, Shandong 266071, China.*

[b] *State Key Laboratory of Urban Water Resource and Environment, Harbin Institute of Technology, Harbin 150090, China.*

[c] *MIIT Key Laboratory of Critical Materials Technology for New Energy Conversion and Storage, School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin 150001, China.*

Corresponding Author * Emails: **hejinmeihit@163.com** **hejinmei@hit.edu.cn**

Abstract

The large-scale applications of lysozyme in the pharmaceutical industry and food industry require more efficient and cost-effective techniques for its separation/purification. In the present study, graphene oxide (GO) was encapsulated into environmentally benign sodium alginate (SA) to prepare a Ca^{2+} crosslinked alginate/graphene oxide composite gel beads (Ca-SA/GO) which were then used to adsorb lysozyme from aqueous solutions. Compared with pure Ca^{2+} crosslinked alginate gel beads (Ca-SA), the as-prepared Ca-SA/GO has a lower swelling degree, an improved gel stability in salt solutions, and a higher mechanical performance. This can be explained by the uniform distribution of GO sheets in the Ca-SA matrix and the existence of hydrogen bonding and high interfacial adhesion between GO filler