Title: Poly(carboxybetaine methacrylate)-grafted silica nanoparticle: A novel carrier for enzyme immobilization

Authors: Liqian Zhang, Yan Sun

PII: S1369-703X(18)30014-7
DOI: https://doi.org/10.1016/j.bej.2018.01.013
Reference: BEJ 6862

To appear in: *Biochemical Engineering Journal*

Received date: 15-11-2017
Revised date: 6-1-2018
Accepted date: 10-1-2018

Please cite this article as: Liqian Zhang, Yan Sun, Poly(carboxybetaine methacrylate)-grafted silica nanoparticle: A novel carrier for enzyme immobilization, Biochemical Engineering Journal https://doi.org/10.1016/j.bej.2018.01.013

Poly(carboxybetaine methacrylate)-grafted silica nanoparticle: A novel carrier for enzyme immobilization

Liqian Zhang, Yan Sun*

Department of Biochemical Engineering and Key Laboratory of Systems Bioengineering (Ministry of Education), School of Chemical Engineering and Technology, Tianjin University, Tianjin 300354, China

∗ Corresponding author:
Tel.: +86 22 27403389; Fax: +86 22 27403389.
E-mail address: ysun@tju.edu.cn (Y. Sun)

Highlights

- ►Zwitterions-grafted nanoparticle (SNPs-pCBMA) was developed for enzyme coupling.
- ►An uncharged polymer-grafted nanoparticle (SNPs-pGMA) was prepared for comparison.
- ►Catalase and lipase bonded on SNPs-pCBMA showed higher stability than on SNPs-pGMA.
- ► Enzymes on SNPs-pCBMA exhibited high stability at neutral and alkaline conditions.

ABSTRACT:

Polymer-coated nanoparticles are favorable carriers for enzyme immobilization for their advantages of high specific surface area, small mass transfer resistance and a large number of active groups for covalent bonding of enzymes. Of the various