Aza-Michael addition reaction: Post-polymerization modification and preparation of PEI/PEG-based polyester hydrogels from enzymatically synthesized reactive polymers

Aza-Michael addition reaction: Post-polymerization modification and preparation of PEI/PEG-based polyester hydrogels from enzymatically synthesized reactive polymers

The utility of aza-Michael addition chemistry for post-polymerization functionalization of enzymatically prepared polyesters is established. For this, itaconate ester and oligoethylene glycol are selected as monomers. A Candida Antarctica lipase B catalyzed polycondensation reaction between the two monomers provides the polyesters, which carry an activated carbon-carbon double bond in the polymer backbone. These electron deficient alkenes represent suitable aza-Michael acceptors and can be engaged in a nucleophilic addition reaction with small molecular mono-amines (aza-Michael donors) to yield functionalized linear polyesters. Employing a poly-amine as the aza-Michael donor, on the other hand, results in the formation of hydrophilic polymer networks.

General information
Publication status: Published
Organisations: Department of Chemical and Biochemical Engineering, The Danish Polymer Centre, Swiss Federal Institute of Technology Zurich, Nanyang Technological University
Contributors: Hoffmann, C., Stuparu, M. C., Daugaard, A. E., Khan, A.
Pages: 745-749
Publication date: 2015
Peer-reviewed: Yes

Publication information
Journal: Journal of Polymer Science. Part A, Polymer Chemistry
Volume: 53
Issue number: 6
ISSN (Print): 0887-624X
Ratings:
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.93 SJR 1.002 SNIP 0.852
Web of Science (2015): Indexed yes
Original language: English
Keywords: aza-Michael addition, Enzymatic polymerization, Functionalization of polymers, Hydrogels, Polyesters
DOIs:
10.1002/pola.27498
Source: Findit
Source ID: 274063741
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review