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Immobilization of enzymes in mesoporous sol-gel silica, enzymatic digestion of biomass, and selectivity for molecular recognition

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Cellobiase enzyme was immobilized in sol-gel solid silica support with D-fructose as a pore-forming agent to make the silica support mesoporous in nature. The activity of the immobilized enzyme was studied. We found that the activities of the immobilized samples depended on the porosity and the pore size of the silica host material. With high fructose content, enzymatic activities up to ~80% (with respect to free cellobiase enzyme) were obtained. The reusability of our immobilized cellobiase offers great potential in its application in the enzymatic hydrolysis of biomass. The molecular recognition behavior of the fabrication method will also be reported.

Biography

Hai-Feng Frank Ji is a Professor in the Department of Chemistry in the College of Arts and Sciences at Drexel University. His current research interests include micro-mechanical sensors for biological and environmental applications, nano-pillars for energy applications, cancer detection and treatment, etc. He has published in more than 130 peer-reviewed journal publications.

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