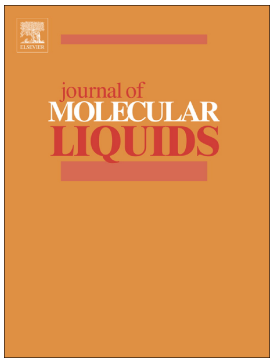

Candida rugosa lipase immobilization on various chemically modified Chromium terephthalate MIL-101

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Candida rugosa lipase immobilization on various chemically modified Chromium terephthalate MIL-101

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Abstract

The paper seeks to immobilize *Candida rugosa* lipase (CRL) on Chromium terephthalate MIL-101 (MIL-101(Cr)) and its three chemically modified forms: amino MIL-101(Cr) (NH_2-MIL), trichlorotriazine amino MIL-101(Cr) (TCT@NH_2-MIL) and glutaraldehyde amino MIL-101(Cr) (Glu@NH_2-MIL). The synthesis process of these metal organic frameworks, CRL immobilization and the morphology of supports were verified using FTIR, PXRD, BET and FE-SEM techniques. The enzyme loading and the specific activity at different initial concentration of lipase for all the supports were measured and the obtained results were compared. The highest specific activity at any given point in the common range of enzyme loading belongs to CRL@Glu@NH_2-MIL. While all the immobilized CRLs show no significant drop in residual activity after pH stress, the thermal stability is just substantially improved for CRL@TCT@NH_2-MIL and CRL@Glu@NH_2-MIL. About 80-90% of the initial enzymatic activity retained after 35 days for all of the supports indicating a significant storage stability of the immobilized CRLs.

Keywords: *Candida rugosa* lipase (CRL), Immobilization, MIL-101(Cr), Stability, Metal organic frameworks