**Pseudo-homogeneous kinetic model for esterification of Propionic acid with**

**N-butanol over silica supported SBA-15.**

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**Abstract:** Esterification of Propionic acid with N-butanol was carried out over silica supported mesoporous catalyst i.e.SI SBA-15. Which were characterized by powder X-ray diffraction and FTIR. A pseudo-homogeneous (P-H) kinetic model was established for esterification of Propionic acid with N-Butanol isomers over silica supported on mesoporous SI SBA-15 catalyst. Effects of various parameters such as reaction time, speed of agitation, temperature, percent catalyst loading, molar ratio and mixture of N-Butanol were investigated in detail. The 2% (w/w) Si SBA 15 was found to be an optimum solid catalyst with 79% conversion with 91% selectivity toward Butyl propionate. The 2% (w/w) SI SBA 15 catalyst was found to be reusable for three cycles. The reaction follows second-order kinetics with activation energies and kinetic constant for N-Butanol. Pseudo-homogeneous kinetic model fitted with R2 value of trend line 0.93. This implies that esterification reaction is kinetically controlled owing to high activation.

Key words: Esterification, Si SBA-15, Pseudo-homogeneous kinetic model and propionic acid.

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