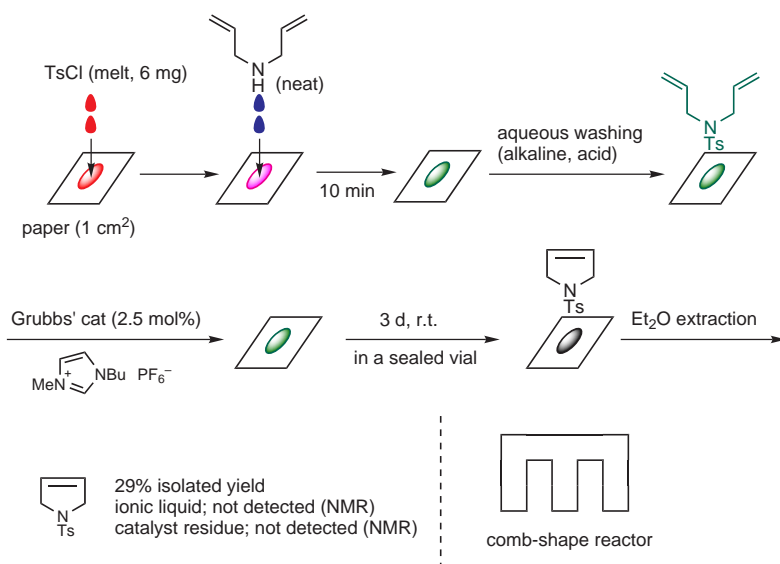


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Carbon–Carbon Bond Forming Reactions with Substrates Absorbed Non-Covalently on a Cellulose Chromatography Paper Support
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Chromatography Paper: A Novel Solid Support



Significance: A cellulose-based chromatography paper was used as a solid support for organic transformations as well as extractive purification. N-tosylation, Grubbs' ring-closing metathesis, and Wadsworth–Emmons olefination were carried out on the chromatography paper support where the substrates and reagents were non-covalently immobilized. For example, as can be seen in the scheme, tosyl chloride was charged on the paper tile as a melt and diallylamine (neat) was added subsequently on to the spot of TsCl. After 10 minutes, the paper reactor was washed with aqueous NaHCO₃, water, diluted acid, and water to remove unreacted TsCl and amine. Ionic liquid solution of Grubbs' catalyst was then loaded onto the reaction spot, and the paper reactor was left for three days in a sealed vial. The paper was extracted with ether to afford a pyrrole product in 29% isolated yield (single extraction) with high purity (NMR analysis).

Comment: This technology would make the preparation of an encoded library easy by pencil-writing encoding. Parallel reactions of various substrate–reagent combinations can be conveniently carried out on a comb-shaped paper, where each comb-tooth supports a unique substrate/reagent and all comb-teeth (the whole comb) can be washed at once.

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