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Reductive Dehalogenation by Phase Transfer Catalysis with New Water Soluble Phosphine-Palladium(II)-Complexes in Presence of Polyether Surfactants

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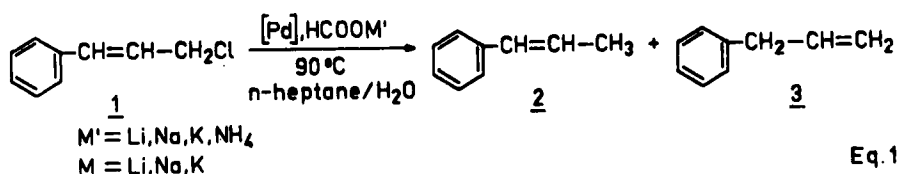
REDUCTIVE DEHALOGENATION BY PHASE TRANSFER CATALYSIS WITH NEW WATER SOLUBLE PHOSPHINE-PALLADIUM(II)- COMPLEXES IN PRESENCE OF POLYETHER SURFACTANTS

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The reductive dehalogenation of benzyl- and allylhalogeni-
 des by a PTC system with water soluble palladium-phosphine
 complexes was described by Okano et al. /1/.

We prepared the following new water soluble phosphines:
 $\text{Ph}_2\text{P}(\text{CH}_2)_3\text{SO}_3\text{M}$, $\text{Ph}_2\text{P}(\text{CH}_2)_4\text{SO}_3\text{M}$, and $\text{Ph}_2\text{PCH}_2\text{C}_6\text{H}_4\text{SO}_3\text{M}(\text{o-})$
 /2/. Pd(II) complexes of these phosphines have been used
 as catalysts in the dehalogenation of cinnamyl chloride
 (eq. 1):



Eq. 1

Byproducts are the alcohols and their formates derived
 from 1. Addition of polyether detergents suppressed the
 formation of alcohols and esters and promoted the reac-
 tion. The ratio 2/3 was strongly influenced by the type
 of polyether. The best selectivity was observed by tri-
 ethylene glycol with about 90 % of 2.

/1/ T. Okano, Y. Moriyama, H. Konishi, J. Kiji; Chem. Lett.
 (1986), 1463

/2/ E. Paetzold, A. Kinting, G. Oehme; J. Prakt. Chem. 329,
 725 (1987)