

SUPPRESSED LEACHING OF A Pd(II) COMPLEX IMMOBILIZED ON HYDROPHILIC GRAPHITE OXIDE USED IN THE HECK COUPLING REACTION

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Abstract

Immobilization of homogeneous organic catalysts has fundamental environmental aspects. It is desirable that (i) the catalyst is prepared under benign conditions and (ii) it is not removed from the surface of the support under catalytic conditions. Graphene based supports such as graphite oxide (GO) seem to be feasible for the achievement of the above two requirements. In this study we heterogenized tetraamminepalladium(II) chloride monohydrate on hydrophilic GO. Two samples, with Pd contents of 2% and 5%, referred to as Pd2 and Pd5 were prepared and tested as catalysts in the Heck coupling reaction of styrene and bromobenzene. The Pd complexes heterogenized on graphene oxide platelets proved to be highly active and selective catalysts. Hot filtration tests revealed that the active Pd particles did not undergo any leaching in NMP and DMF solvents at 423 K.

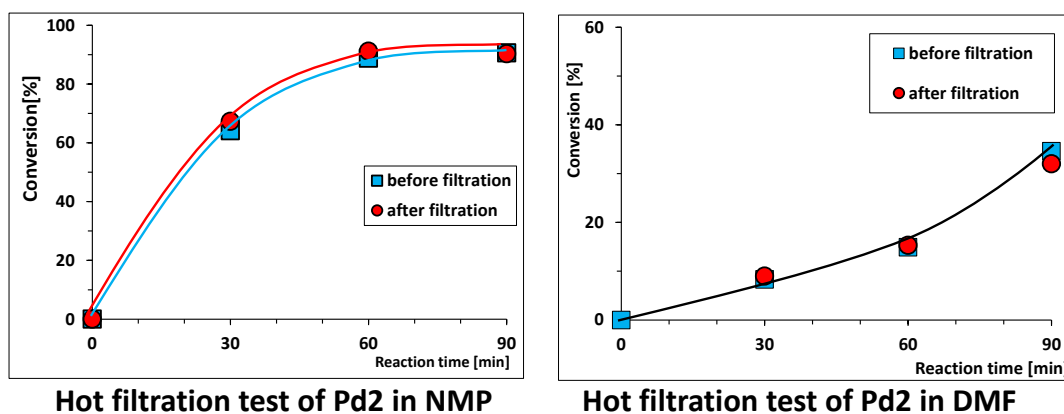


Figure 1. Conversions of the coupling reaction between styrene and bromobenzene in the presence of a catalyst containing 2 wt% Pd on GO as a function of reaction time in N-methyl pyrrolidone (left) and dimethyl formamide (right)

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References

- [1] F. Christoffel, T.R. Ward, *Catal. Lett.* 148 (2018) 489.
- [2] Á. Mastalir, M. Hancsárik, T. Szabó, Immobilization of a Pd(II) complex on hydrophilic graphite oxide and its catalytic investigation in the Heck coupling reaction, manuscript submitted to publication.