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Efficient microwave-assisted dealkylation of methoxyphenols in ionic liquids

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PURPOSE OF THE ABSTRACT

During the past decades, dealkylation of polyfunctional alkyl aryl ether has been an important challenge in organic synthesis, especially for deprotection purpose. Indeed, the traditional cleavage of C(sp³)-O bonds usually involves Lewis acids, Brønsted acids, strong bases and harsh conditions, which causes appearance of side products and inconvenient handling [1-2]. In a concern of sustainability, the use of ionic liquids (ILs) could provide softer conditions and cleaner results.

ILs (see examples Scheme 1) are organic salts which are liquid at room temperature with low vapor pressure and high thermal stability. Therefore, they are mainly used as solvent for insoluble substrates and biomass pre-treatments [3]. These salts are already used for dealkylation of alkyl aryl ether under microwave irradiation, but only few examples deal with alkoxyphenols [4]. Moreover, the scale up, which is a challenging point with this process, is not covered, as well as recyclability of ILs.

In the present work, dealkylation of a large range of methoxyphenols in different ILs under microwave irradiation will be presented. Influence of several parameters, the scale up and the recyclability of ILs will be discussed.

FIGURES

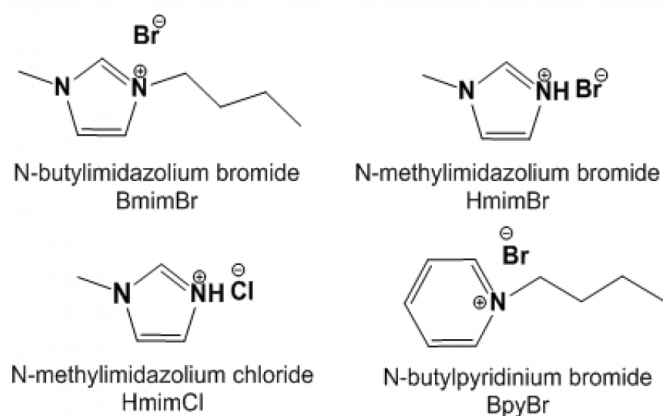


FIGURE 1

Examples of imidazolium- and pyridinium-based ionic liquids

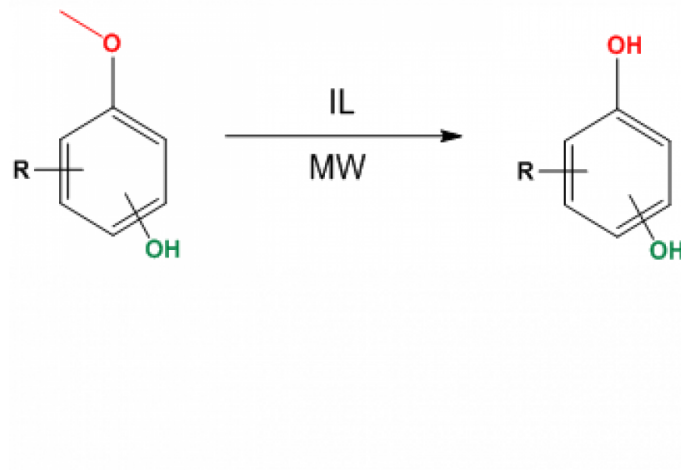


FIGURE 2

Demethylation of functionalized methoxyphenols in ILs under microwave irradiation

KEYWORDS

Ionic liquids | demethylation | Microwave

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