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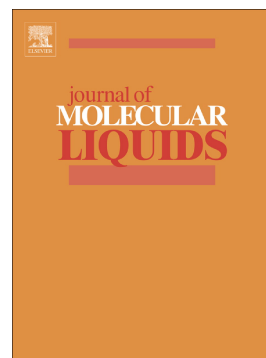
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Significant effect of 5,10,15,20-*meso*-tetraarylporphyrinatoiron(III) chloride/triflate and acidic/neutral/basic imidazolium ionic liquids in catalytic oxidation of phenols

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Abstract: The influence of acidic, neutral and basic ionic liquids and their binary mixture with dichloromethane on the reactivity of iron(III)porphyrins was investigated during oxidation of phenols with hydrogen peroxide catalyzed by 5,10,15,20-tetraarylporphyrinatoiron(III) chloride and 5,10,15,20-tetraarylporphyrinatoiron(III) triflate. The generation of different intermediates of iron(III) porphyrin in different ILs was studied through viscosity, density, UV-Vis and ^1H NMR spectroscopy. The heterolytic cleavage efficiency of $(\text{TAP})\text{Fe}^{\text{III}}\text{-OOH}$ and formation of quinone using iron(III)porphyrin $(\text{TAP})\text{Fe}^{\text{III}}\text{Cl}$ with Cl atom as an axial ligand, is influenced by the structure of imidazolium moiety and the counteranion following the order $[(\text{CH}_2)_4\text{SO}_3\text{HMIm}]\text{CF}_3\text{COO} > [\text{Hmim}]\text{CF}_3\text{COO} > [\text{bmim}]\text{TFA} \gg \text{negligible amount in } [\text{bmim}]\text{CF}_3\text{SO}_3, [\text{Hmim}]\text{CF}_3\text{SO}_3, [\text{bmim}]\text{BF}_4, [\text{bmim}]\text{PF}_6 \text{ and } [\text{bmim}]\text{Cl}$. On the other hand, the heterolytic cleavage efficiency of $(\text{TAP})\text{Fe}^{\text{III}}\text{-OOH}$ with iron(III)porphyrin $(\text{TAP})\text{Fe}^{\text{III}}\text{CF}_3\text{SO}_3$ with triflate as an axial ligand, was found in the following order $[(\text{CH}_2)_4\text{SO}_3\text{HMIm}]\text{CF}_3\text{SO}_3 > [\text{Hmim}]\text{CF}_3\text{SO}_3 > [(\text{CH}_2)_4\text{SO}_3\text{HMIm}]\text{CF}_3\text{COO} > [\text{Hmim}]\text{CF}_3\text{COO} > [\text{bmim}]\text{CF}_3\text{COO} > [\text{bmim}]\text{PF}_6 \approx [\text{bmim}]\text{BF}_4 \approx [\text{bmim}]\text{CF}_3\text{SO}_3$, while epoxidation and polymerization were mainly observed in basic and neutral ILs. The reactive intermediates formed by the reaction of monooxygen donors with $(\text{TAP})\text{Fe}^{\text{III}}\text{Cl}$

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