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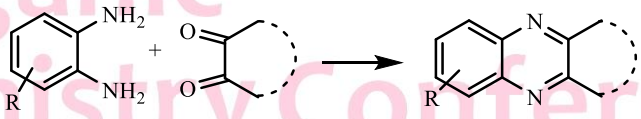
Synthesis of quinoxalines accelerated by a new nanocatalyst based on ionic liquid stabilized on TiO_2 and Kaolin

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Ionic liquids (ILs) have been recognized as appropriate green catalysts/solvents in organic transformations. This is due to their remarkable properties such as negligible vapor pressure, thermal stability over a wide temperature range,non-flammability and ability to dissolve organic and inorganic compounds. Nevertheless, several drawbacks of ILs such as high cost, high viscosity, large consumption and separation difficulties restrict their large-scale applications. However, these issues can be solved efficiently by using supported ionic liquids (SILs) prepared by the immobilization of ILs on solid supports. SILs offer several advantages such as ease of handling, minimizing the amount of IL utilized in the reactions and simple separation, and reuse. In this regard, various supports have been used to immobilize ILs, including silica, clays and metal oxides. In the meantime, natural clays such as kaolin have received more attention due to their outstanding physical and chemical properties, abundance in nature around the world, low cost, and environmental advantages. Also, TiO_2 nanoparticles due to their low cost, easy synthesis and high thermal stability can efficiently be used for this purpose. In this project, we want to make a catalyst by the immobilization of an the ionic liquid on a solid substrate prpared from TiO_2 and Kaolin that can be easily separated from the reactions. The simple preparation of the catalyst, short reaction time, high efficiency, and the ability to recycle the catalyst are the main advantages of this method. Also, this catalyst is effective in increasing the speed of the synthesis of quinoxalines or benzopyrazines, as very important groups of nitrogen-containing compounds.



Keywords: TiO_2, Kaolin , Ionic liquid, Nano-catalyst, Quinoxalines

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