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Catalytic pyrolysis, pyrolytic products and its applications

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Energy plays very important role in the progress of any nation because it is mandatory for transportation, industrial or agricultural progress, power production and several more diverse regions. The energy source including fossils fuels are inadequate and not capable to achieve the world's collective appeal of energy for a long period. Recently, due to social and economic benefits pyrolysis technology of thermo-chemical biomass transformation into biofuels i.e., bio oil, bio char and bio gas have been preferred. Biomass and its composition play an ultimate role in the determination of pyrolysis products. Catalytic pyrolysis is generally preferred over thermal pyrolysis because of several advantages like less retention time, low temperature, and high quality products. Bio-oil produced from pyrolysis process gained greater importance over fossil fuels. The thermochemical conversion of biomass into bio-oil provides clean fuel which is CO2 and greenhouse gases neutral. Additionally, forest biomass feedstock possesses negligible quantity of sulfur that results in no SOX emission. Another advantage of pyrolytic bio-oil that NOX emission reduced to 50% as compared to diesel oils in gas turbine. Hence, the generated pyrolytic bio-oils are cleaner, eco-friendlier and generate insignificant amount of pollution. Bio-char an economically feasible promising technology used for wide scale environmental applications for the removal or recovery of precious and heavy metal during wastewater treatment. Traditional technologies for the elimination of precious metals possess many limitations including costly setups, and incomplete removal along with the production of secondary toxic wastes. Additionally, bio-char limits emission of greenhouse gases in atmosphere, lower fertilizers requirement and reduce erosion. This study attempts to minimize hazardous impact of waste burning and poor-managements on human health and environment.

Biography

Dr. Muhammad Imran Din received his PhD in Physical Chemistry from the Islamia University of Bahawalpur in 2013. He joined the School of Chemistry, University of the Punjab, Lahore, Pakistan, in November 2009. His field of interest is adsorption by activated carbon, theoretical chemistry, computational chemistry and material chemistry. Currently he is working on high surface area activated carbon. His research work is published in different international journals and presented at various international conferences held worldwide. He has published over 145 research articles in leading international journals.