

Amine containing polymer for acidic gas adsorption with thermal and oxidative stability

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Recently, much attention have been focused on capture the acidic gas in flue gas containing of 10 % of CO<sub>2</sub> and few hundreds ppm of SO<sub>2</sub> and NO<sub>2</sub> which cause the adverse enviromental change. Especially, amine containing polymer infiltraed into mesoporous metal oxide channel is excellent adsorbents due to the fact the high loaded amount of amine on support. Branched polyethyleneimine (PEI) is representative amine polymer which contains primary, secondary and tertiary amine. Although the performance for capture the acidic gas has been studied widely, its thermal, oxidative stability on adsorption of acidic gas have not been considered much. The stability on heat and air is important questions to use it commercially. In here, we synthesized PEI/SBA-15 and methylated PEI/SBA-15 which consists of various type of amines and only tertiary amine, respectively and conducted degradation process of PEI and MePEI from 90 c to 130 c under dry air. We looked that the amine polymer and oxidative degraded polymer show adsorption behavior on acidic gas and found amine groups how to interact with acidic gas via in-situ FT-IR and NMR study.