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Synthesis and Characterization of Co-Pb/SBA-15 Mesoporous Catalysts

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Abstract: Pure SBA-15 and Co and/or Pb incorporated SBA-15 have been prepared by direct synthesis. The synthesized samples were characterized by powder X-ray diffraction and N₂ adsorption isotherms. It is observed that the surface area of pure SBA-15 mesoporous structure slowly decreases by the addition of metal oxides. By the loading of 5, 10, 15 wt % Pb into SBA-15, no characteristic peaks of metal oxide observed in the large angle XRD pattern. But loading of 20 wt % Pb in SBA-15 shows more appreciable characteristic peaks, indicating small quantity of crystallites of metal oxide existing on the surface of silica. Low angle XRD patterns show that introduction of high amount of cobalt and lead oxides to SBA-15 result in the long range order. There are chemical interactions in between host SBA-15 and guest metal oxides and the strength of these interactions depend on the type of metal oxide and the amount of metal oxide loaded to SBA-15.

Key Words: Mesoporous materials; SBA-15; Lead; Cobalt; Catalyst.

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