C_E_R_T_I_F_I_C_A_T_E

(i) I am satisfied that the thesis presented by Mrs. Shashi Anand is worthy of consideration for the award of the degree of Doctor of Philosophy.

(ii) I certify :-

(a) that she has pursued the prescribed course of research.

(b) that she is of good moral character.

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15. 10. 7

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A_B_S_T_R_A_C_T

Pure oxides of bismuth and molybdenum and four samples of mixed oxides containing varying atomic ratios of Bi to Mo ranging from 2.4/1 to 0.46/1 were prepared. The chemical and phase composition of the samples were established by chemical analysis, DTA, i.r. and X-ray techniques. Surface areas of the oxides were determined both by the BET method and by measuring adsorption of p-nitrophenol from benzene solutions. An extensive study of adsorption from binary liquid mixtures of benzene and various alcohols was undertaken for all the six solids. Methyl, ethyl, n-butyl and n-octyl alcohols were used. The data were interpreted and analysed in terms of the five types of composite isotherms already reported in the literature. Also two additional types of isotherms were postulated. Catalytic oxidation of o-,m-and p- xylenes on these oxides samples were studied. In order to establish the optimum conditions the effect of reaction parameters, like catalyst temperature, space velocity, hydrocarbon and oxygen concentration, residence time etc. were determined for o-xylene. The products were analysed by gas chromatography and the extent of selectivity in oxidation was examined.

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LIST OF FIGURES

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