MÖSSBAUER SPECTROSCOPY IN CATALYSIS

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Among other fields, Mössbauer spectroscopy is an efficient tool to study various catalysts. The method is linked inherently to gamma rays which may penetrate through low mass number media, thereby providing a mean for in situ studies on supported catalysts.

The utilisation of the method in this direction commenced in the 1970's. Studies have been focussed on various fieds of catalysis since then [1].

An overview is given on various topics in which the method provided principal contributions to the analysis of catalysts and to reveal their state during catalytic processes. Certain selected examples are presented to illustrate various facets of the potentials of the method.

Among others

- initial stages of the formation of carbide phases in supported Fischer-Tropsh catalysts,

- early stages of formation and stabilisation of bimetallic Pd_xFe (x = 1,3) phases on SiO_2 and NaX zeolite cages and correlation with catalytic performance in CH_3OH formation, [2]

- variation of composition of $PtSn_x$ (x = 1-4) and correlated Sn(IV) $\leftrightarrow$ Sn(0) reversible processen on supported SiO_2 catalysts during hydrodechlorination, [3]

- framework-extraframework dinuclear iron centres in zeolites, [5]

- early stages of formation of carbide phases in $Cu_{1-x}Co_xFe_2O_4$ ferrospinels, and its correlation with the catalytic performance in alkylation, [4]

- comparison of redox changes of iron in ferrisilicates and in FeAlPO-s , [6]

- performance of composite Fe_2O_3/SBA-15 mesoporous catalysts in total oxidation of phenol, [7]

are demonstrated and interpreted in relation with the catalytic performance. [8]

Future perspective directions are also mentioned briefly [9].

References
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