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In situ deposition of M(M=Zn; Ni; Co)-MOF-74 over structured carriers for cyclohexene oxidation - Spectroscopic and microscopic characterisation

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Authors:	Anna Gancarczyk, et al.
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The aim of this study was to obtain and characterise thin metal organic frameworks layers supported on various metallic structured carriers such as FeCrAl plates and woven gauzes and NiCr foams. The thin layers of the metal organic frameworks were fabricated by in situ solvothermal deposition, optimised by the selection of metal precursor and the layering/washing order. The parameters of the resulting metal organic framework coatings were characterised in terms of layer thickness in correlation with the fold overlap, morphology, chemical properties and mechanical resistance to ultrasonic irradiation. Several techniques were used to characterise metal-organic framework layers, including in situ FTIR, μRaman mapping, XRD, low temperature sorption of liquid nitrogen, and SEM. The results of structural analysis of prepared structured catalysts revealed that the surfaces of the structured carriers are uniformly covered with Me-MOF-74 thin layers. The mechanical stability tests showed that the metallic foams possessed high mechanical resistance and may be considered as a structured support for heterogeneous catalysts.

Metryczka

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