

Electrophoretic Deposition of Al_2O_3 Layer for the Preparation of Metal Structured Catalyst

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The structured catalysts have been developed to improve mass and heat transfer and scalability. In this study, electrophoretic deposition (EPD) has been applied for the coating of Al_2O_3 layer on the metal monolith. In the EPD system, particles of colloid suspension are deposited on the surface of an electrode under the influence of an electric field. This method has advantages of short formation time, simple apparatus and little restriction of the shape of substrate. The thickness of Al_2O_3 layer was controlled by the applied voltage, surface area of electrode and deposition time. The thickness and morphology were characterized by SEM. The prepared structure catalysts were applied for the steam reforming of natural gas to evaluate the catalytic activity. The wash-coated catalyst was used as a reference.