TEM of Catalytic Materials

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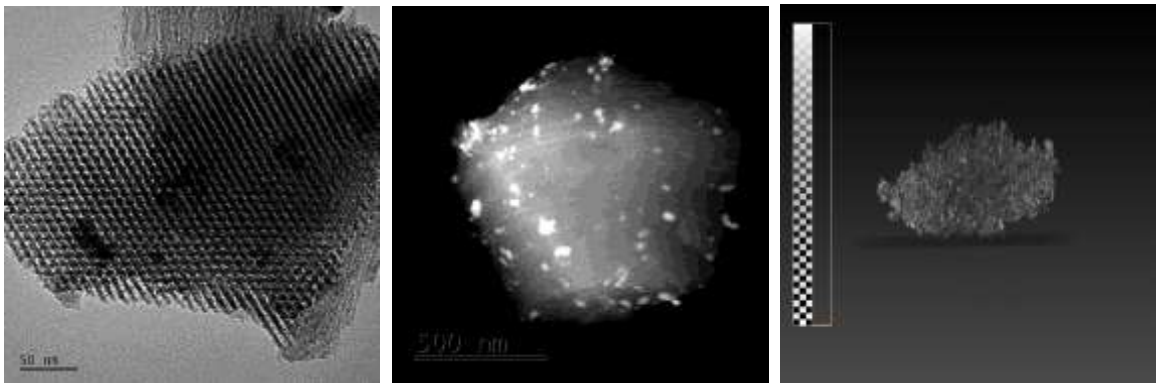
Abstract. We propose an application of yeast cells as alternative, ecological and economical material for macropore templates that enhance transport properties and conversions in multiple coated catalyst layers. The grown baker's yeast cells exhibit a suitable. Naturally uniform size, are cheap and readily removable from the layer upon calcination. Their application is demonstrated in Pt/γ-Al_2O_3 layers typically used in exhaust gas oxidation catalysts. The layers coated with and without yeast cells are compared by the means of porosimetry, cross-section SEM images and lab reactor tests for CO oxidation. Porous layer formation is simulated in 3D and multi-scale model is used to predict effective diffusivity and conversions of CO in the coatings. The model predictions agree well with lab reactor tests and clearly demonstrate improved transport properties and conversions in multiple layers configuration with additional macropores resulting from the yeast cell templates.



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