

DSM Science & Technology Awards (NORTH) 2008	
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Chemical industry extensively uses microporous materials with pore diameters close to the size of individual molecules. Such materials are excellent tools for conversions or separations of molecules. A continuous search for new types of these materials is essential for the development of such industrial processes. In this PhD project, the applicability of the recently developed class of Metal-Organic Frameworks (MOFs) is investigated for catalysis and adsorption. A copper-containing MOF can be used for the production of fragrance components with similar or higher yields in comparison with conventional industrial catalysts. With a vanadium and an aluminium terephthalate MOF, a product stream of xylenes and ethylbenzene can be separated into its individual components with superior selectivity compared to existing separation processes. This separation is a challenging problem in industry, due to the similarity of the boiling points and to the enormous markets of these components, for instance as precursors for PET and polystyrene plastics.