

On the precipitation mechanism and the role of the post-precipitation steps during the synthesis of binary ZnO–Al₂O₃ composites with high specific surface area

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Zinc oxide, aluminium oxide and binary ZnO–Al₂O₃ composites were synthesized using a novel preparation method that combines continuous precipitation in a microreactor with an immediate spray drying process. The sequence of the post-precipitation processes as well as the type of drying can therefore be investigated in detail and turn out to be crucial parameters to achieve high specific surface areas. By optimizing those unit operations the formation of hydrotalcite during the synthesis can be suppressed resulting in an increase of the BET surface area up to 144 m² g⁻¹ for the co-precipitated, washed, freeze-dried and subsequently calcined Zn–Al precursor.