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EFFECT OF PREPARATION METHOD ON CATALYTIC PROPERTIES OF K- PROMOTED Co-Mn-Al MIXED OXIDES FOR DIRECT NO DECOMPOSITION

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Recent experimental studies carried out at the VSB-TU Ostrava show that Co-Mn mixed oxides catalysts can be effective catalysts in direct decomposition of NO. In this contribution, Co-Mn-Al mixed oxides were prepared by two different methods – calcination of hydrotalcite-like precursors and calcination of corresponding nitrates (NIT). Potassium promotion was performed by bulk promotion method (BP) and impregnation by pore filling method (IMP). The catalysts were characterized by AAS, XRD, TPD-CO_2, TPR-H_2, nitrogen physisorption (S_{BET}) and EDX and tested for direct NO decomposition in inert gas. Different conditions of synthesis led to the formation of spinel-like phase with different structural properties leading to different catalytic activity. The synthesis from hydrotalcite-like precursor using bulk promotion for potassium addition provided the catalyst with the highest amount of medium and strong basic sites, the highest specific surface area and highest catalytic activity and stability.

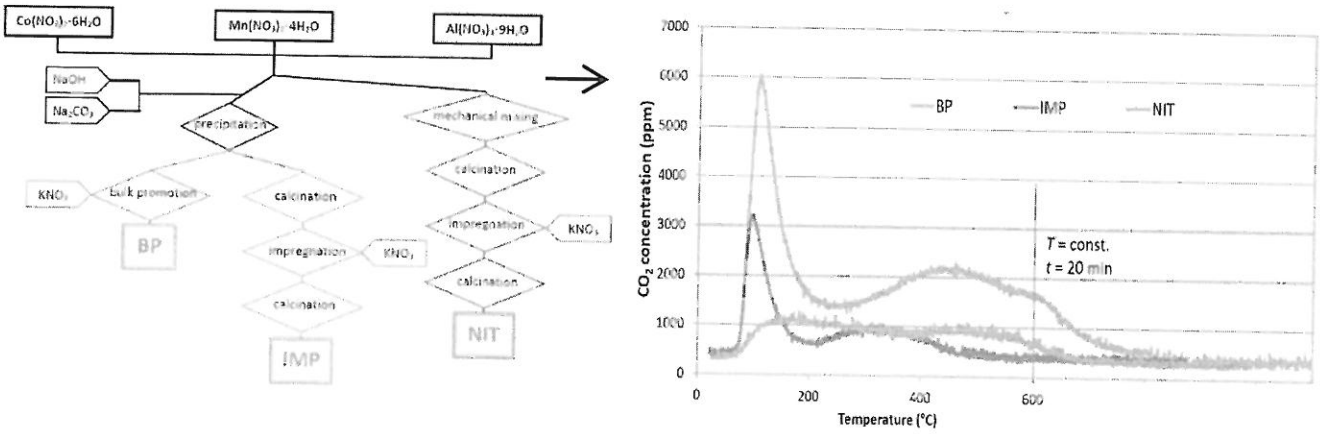

Fig. 1: Preparation methods and TPD-CO_2 profiles of BP, IMP and NIT calcined at 600 °C for 4 h.

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