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Jiráťová, Květa  
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## COBALT OXIDES DEPOSITED ON METAL SIEVES AS CATALYSTS FOR VOC OXIDATION

Jiráťová K.<sup>1</sup>, Balabánová J.<sup>1</sup>, Klempa J.<sup>1</sup>, Kšířová P.<sup>2</sup>, Kovanda F.<sup>2</sup>

<sup>1</sup>*Institute of Chemical Process Fundamentals of the CAS, v.v.i., Rozvojová 135, 165 02 Prague 6, Czech Republic*

<sup>2</sup>*University of Chemistry and Technology, Prague, Technická 5, 166 28 Prague 6, Czech Republic*

Volatile organic compounds (VOC) in industrial gases represent a serious environmental problem, which can be solved using total catalytic oxidation. Oxides of transition metals are a cheaper alternative to noble metal catalysts. Low pressure drop of the catalyst layer is a crucial parameter especially for the processes, in which high gas throughputs are applied. For that reason, development of structured catalysts is important. Ethanol is often used as a fuel for buses and cars and, therefore, its catalytic total oxidation is worth studying. In the present work we used aluminum and stainless steel sieves with different mesh size as catalysts supports (the dense and thin sieves with open area of 27 and 39 %, respectively). Various ways were applied for deposition of the active component ( $\text{Co}_3\text{O}_4$  oxide) on the supports. The cobalt hydroxide sol [1] was deposited on etched aluminum sieves. Other methods were used for obtaining the Co-containing precursors on the stainless steel sieves: electrochemical synthesis of cobalt hydroxides by cathodic reduction of cobalt nitrate in aqueous solutions, hydrothermal synthesis of cobalt carbonate, and plasma sputtering of Co. The supported  $\text{Co}_3\text{O}_4$  oxide was obtained after heating the metal sieves with deposited precursors at 500 °C in air. The prepared catalysts were characterized by XRD, SEM, TPR, and porous structure measurements. The activity and selectivity of the supported catalysts in the ethanol oxidation were examined and compared with those of pelletized  $\text{Co}_3\text{O}_4$ .

### References:

<sup>1</sup> Lin, Ch.; J.A. Ritter; J.A.; Popov, B.N., J. Electrochem. Soc. **1998**, 4097-4103.

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