

# Polymetallic catalyst and its application in the aqueous hydrodechlorination of Aroclor 1260

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**Scientific topic:** Green Catalysis

**Keywords:** Used catalytic converters; *Klebsiella oxytoca* DSM 29614 ; Bio-generated catalyst; Poly-metallic polysaccharide; PCBs;

## Abstract

After aqua regia treatment of grinded exhausted catalytic converters and filtration, the solution was concentrated, neutralized and added to a broth of *Klebsiella oxytoca* DSM 29614 to produce nanoparticle metals-polysaccharide composite, (Met<sub>x</sub>NPs-EPS = I), which was easily recovered, purified and might be used as a green polymetallic catalyst in water or in two-phase aqueous conditions. The % recovery of metals, originally present in the converter and now embedded in a peculiar polysaccharide structure, was fine-good. Here we describe the application of this composite as catalyst to treat polychlorinated biphenyls (PCBs) [1,2] in water. PCBs can be hydrodechlorinated with hydrogen using Pd-based catalysts that show a high potential for the destruction of such contaminants in water [3]. We explored different reaction parameters with this new catalyst (I) that contains Pd and other metals. Promising results, working at 1MPa of hydrogen and 60°C, were observed with significant removal of higher chlorinated congeners (Figure). These results improve strongly our recent data obtained working with bimetallic Pd,Fe-EPS [3] at 3MPa and 60°C, underlining possible cooperative effects among different metals.

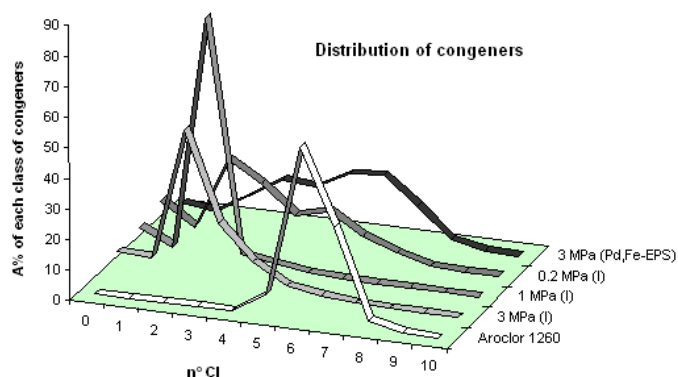


Figure. Distribution and area % of congeners in Aroclor 1260 in the different experiments

## References

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