Supporting information for the article

Design and parallel synthesis of novel selective hydrogen oxidation catalysts and their application in alkane dehydrogenation,

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Parallel vacuum pore impregnation reactor. The disassembled reactor is shown in Figure S1. It is constructed out of a regular 300 mL jacketed glass reactor that has been fitted with an aluminium plate (glued with heat-resistant silicon adhesive) into which two long screws are bored. A cylindrical PVC shell into which 7 holes are bored is mounted on the aluminium plate and fastened with the screws using the red nuts. The diameter of the holes should be approximately 1 mm larger than the diameter of the sample vials (in earlier experiments we drilled the holes exactly to fit the sample vials, but then the vials did not shake sufficiently to break up the large aggregates that can form in the pore impregnation process). The lid of the reactor is a 6 mm glass plate into which seven halves of GC vials have been attached. These vials are fitted with disposable PTFE-coated septa that can easily be replaced after each impregnation cycle. The vacuum outlet was attached to a simple lab turbopump (~ 1 mm Hg). Silicon grease was used to maintain the vacuum inside the reactor during the impregnations. The shaking of the vials was performed by placing the reactor in contact with a Vortex shaker for 4–5 min. Up to 1/3 of the volume in the vial could be filled with the support material without danger of contamination between the materials.

Figure S1. Photo of the parallel pore impregnation reactor, disassembled.

Preparation of the antimony tartarate complex. Antimony oxide, Sb_2O_3, is not soluble in water, nor in conc. HNO_3 or AcOH. The tartarate complex, however, can be prepared by stirring Sb_2O_3 with an excess of tartaric acid in *cold* water (heating causes the hydrolysis of the tartarate complex).

A mixture of Sb_2O_3, (10 mmol, 2.91 g), tartaric acid (180 mmol, 27.01 g) and water (31 g) was stirred at 5–10 ºC for 4 days. After almost all of the antimony oxide dissolved (a fine layer of residue was left on the bottom of the flask) the solution was filtered. The final concentration of antimony was 0.44 mM.