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## **[214] Comparison of single Rh adatoms on $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>(1-102) and TiO<sub>2</sub>(110) stabilized by adsorbed water**

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Despite its high cost, rhodium is a widely applied catalyst. So-called single-atom catalysis offers an opportunity to reduce the amount of Rh required for traditional heterogeneous catalysis, and a path to heterogenize homogeneous reactions.

Using STM, nc-AFM and XPS we compare the stability of Rh adatoms on two different model supports:  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>(1 $\bar{1}$ 02) and TiO<sub>2</sub>(110), both after metal deposition in UHV and in a  $2 * 10^{-8}$  mbar water background. We show that the Rh adatoms on  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>(1 $\bar{1}$ 02) sinter in UHV, but are stabilized by water up to 150 °C through coordination to 2–3 OH ligands. In contrast, Rh adatoms on TiO<sub>2</sub>(110) could not be stabilized above room temperature.

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