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Supporting Information

Microwave-Assisted Reductive Amination of Aldehydes and Ketones Over Rhodium-Based Heterogeneous Catalysts

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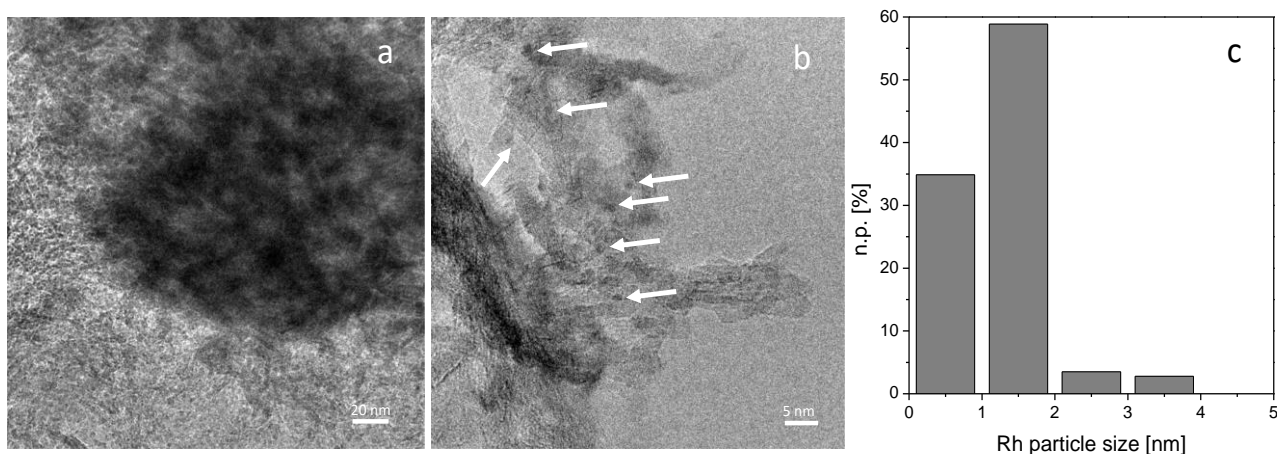


Figure SI-1. TEM (a), HR-TEM (b) representative images of commercial Rh/Al₂O₃ and Rh particle size distribution (c). The Rh nanoparticles are highlighted by white harrows, n.p. [%] represents the number of counted particles of diameter d_i . Instrumental magnification 100000 \times and 600000 \times , respectively.

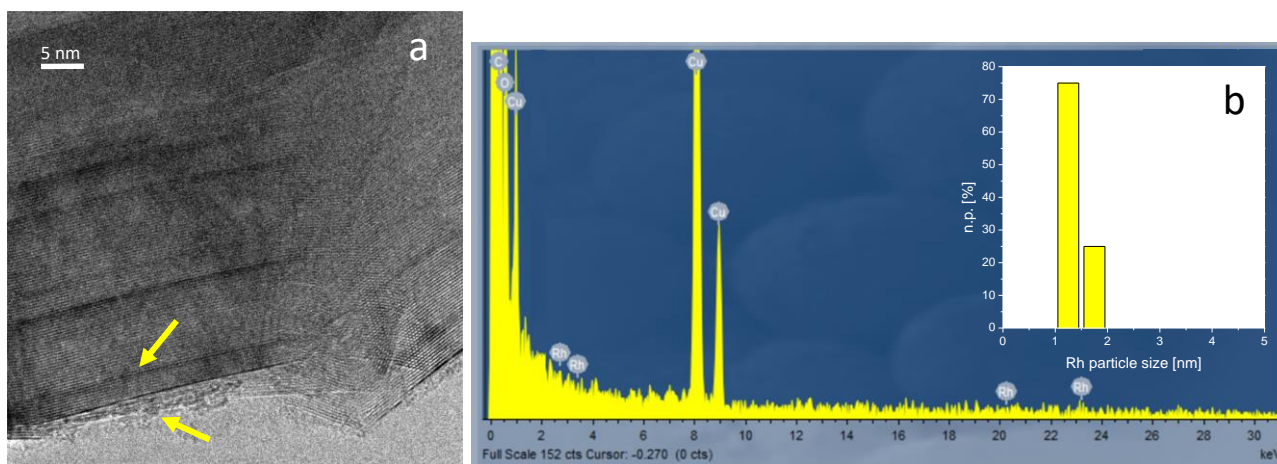


Figure SI-2. HR-TEM (a) representative images of the Rh/HHT PVA catalyst with the correspond EDS analysis and Rh particle size distribution (b). The Rh nanoparticles are highlighted by yellow harrows, n.p. [%] represents the number of counted particles of diameter d_i . Instrumental magnification 400000 \times .

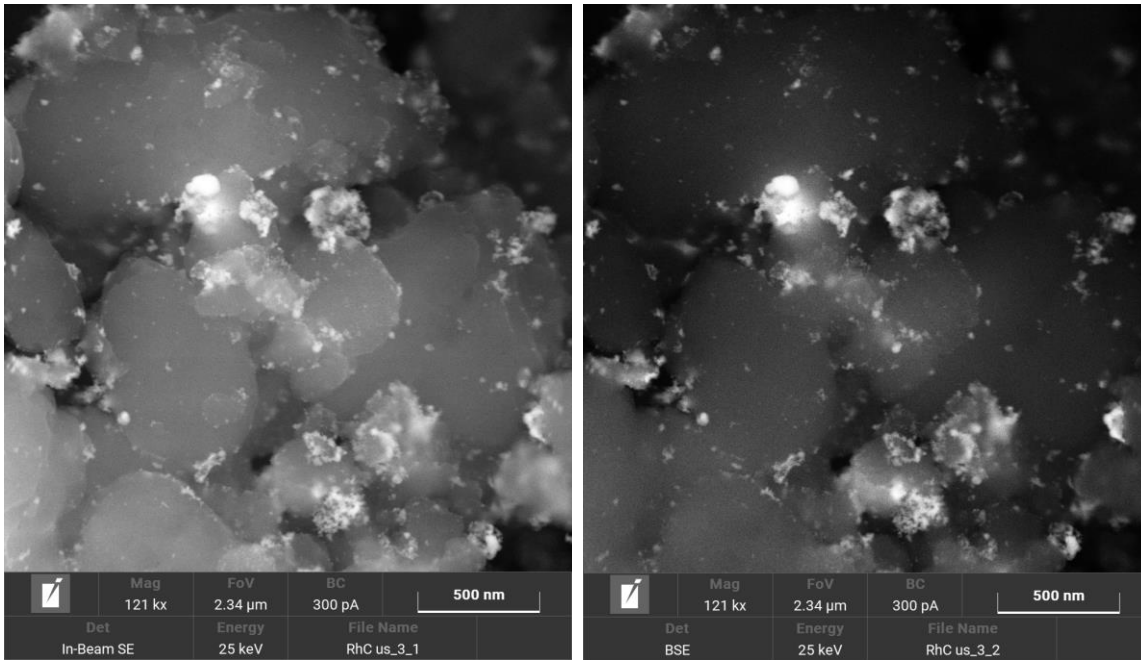


Figure SI-3. FESEM representative images of the Rh/C US catalyst acquired in SE (left) and BSE (right) modes.

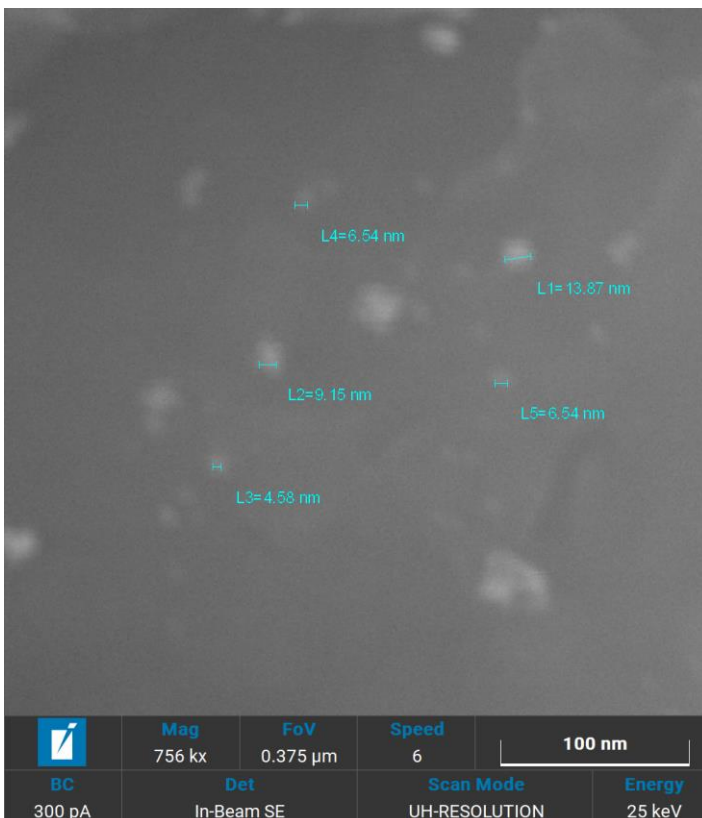


Figure SI-4. FESEM image at high magnification of the Rh/C US catalyst acquired in ultra-high resolution mode in which the Rh particles appear brighter with respect to the support and have been measured.

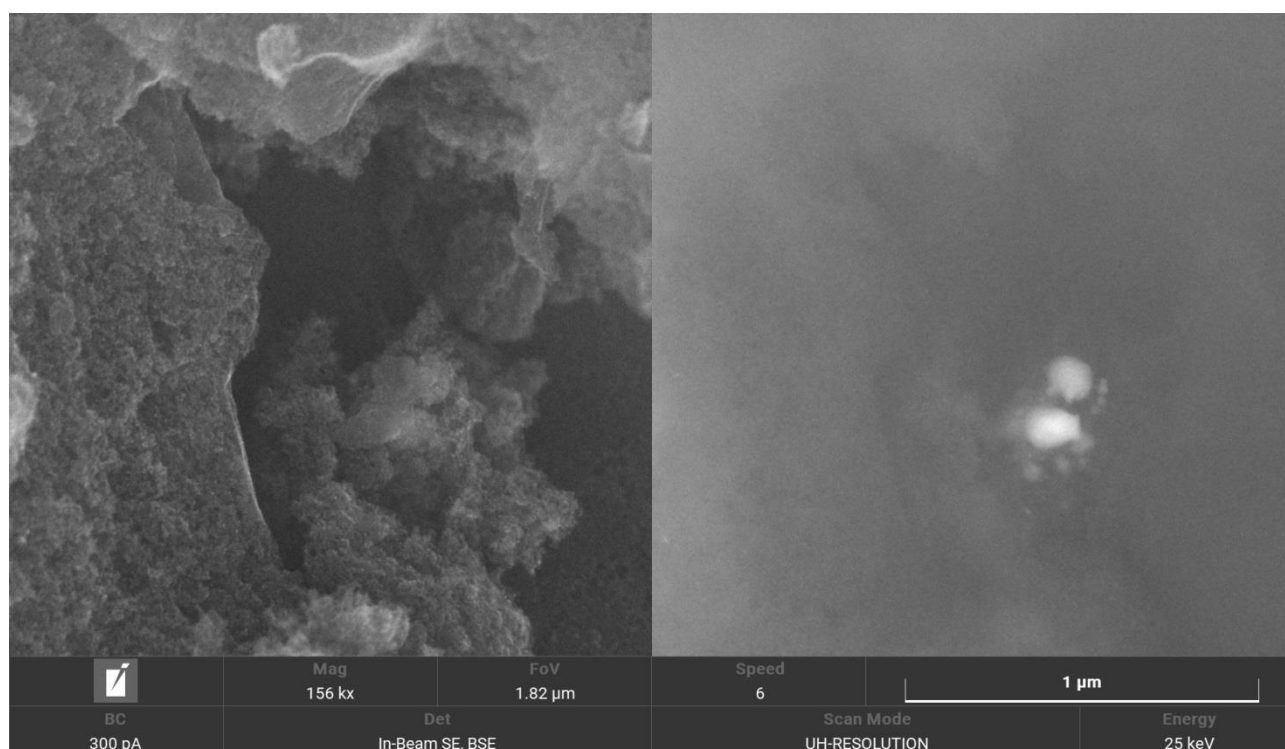


Figure SI-5. FESEM representative images of the Rh/C commercial catalyst acquired in Beam SE (left) and BSE (right) modes.

Table SI-1: Observed products in the reductive amination of *p*-chloroacetophenone and *p*-methoxyacetophenone.

Substrate	Time (h)	H ₂ (bar)	Sel. Acetophenone (%)	Sel. Aliphatic amine (%)	Sel. Aromatic amine (%)	Sel. Aliphatic alcohol (%)	Sel. Aromatic alcohol (%)	Sel. Aliphatic ketone (%)
<i>p</i> -chloroacetophenone	2	5	84.2	0.0	9.3	6.5	0.0	0.0
<i>p</i> -methoxyacetophenone	2	5	0.0	0.0	85.7	0.0	14.3	0.0
<i>p</i> -methoxyacetophenone	4	5	0.0	13.7	58.5	0.0	32.2	0.0

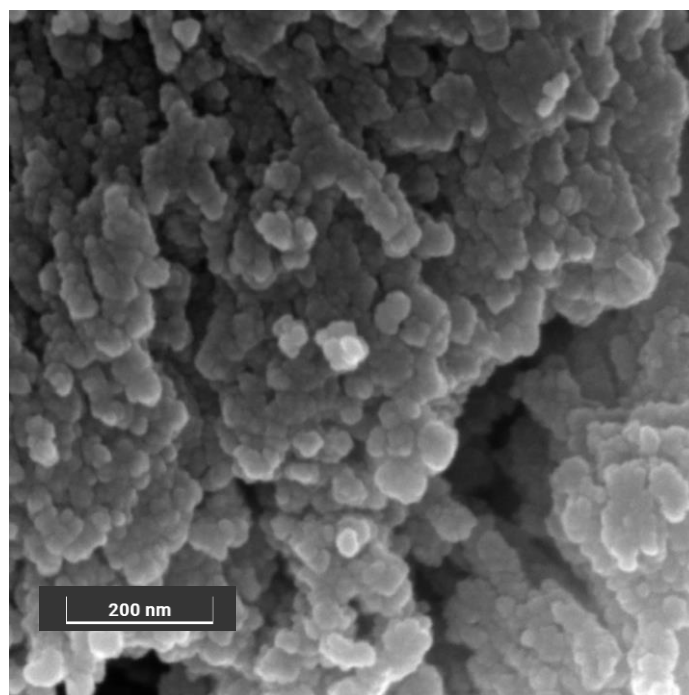


Figure SI-6. FESEM representative image of the Rh/C commercial catalyst after MW-assisted reductive amination of benzaldehyde acquired in Beam SE mode. Reaction conditions: 80 °C, 10 bar H₂, 1 h.

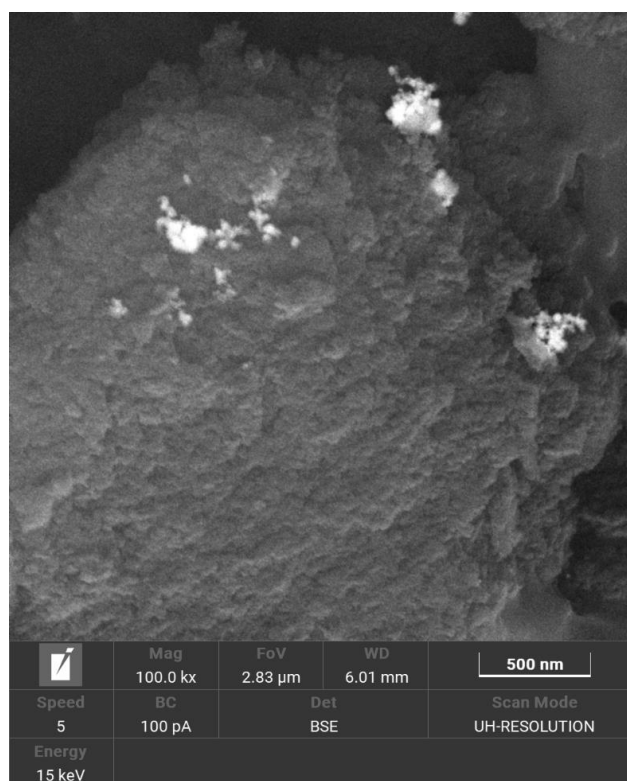
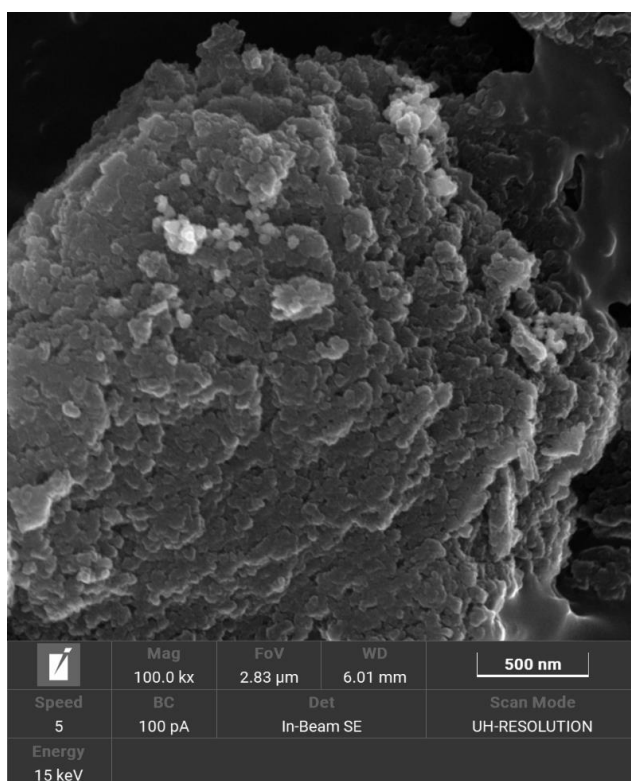


Figure SI-7. FESEM representative images of the Rh/C commercial catalyst after MW-assisted reductive amination of benzaldehyde acquired in Beam SE (left) and BSE (right) modes. Rh particle agglomerates appear brighter with respect to the support (right) Reaction conditions: 80 °C, 10 bar H₂, 1 h.

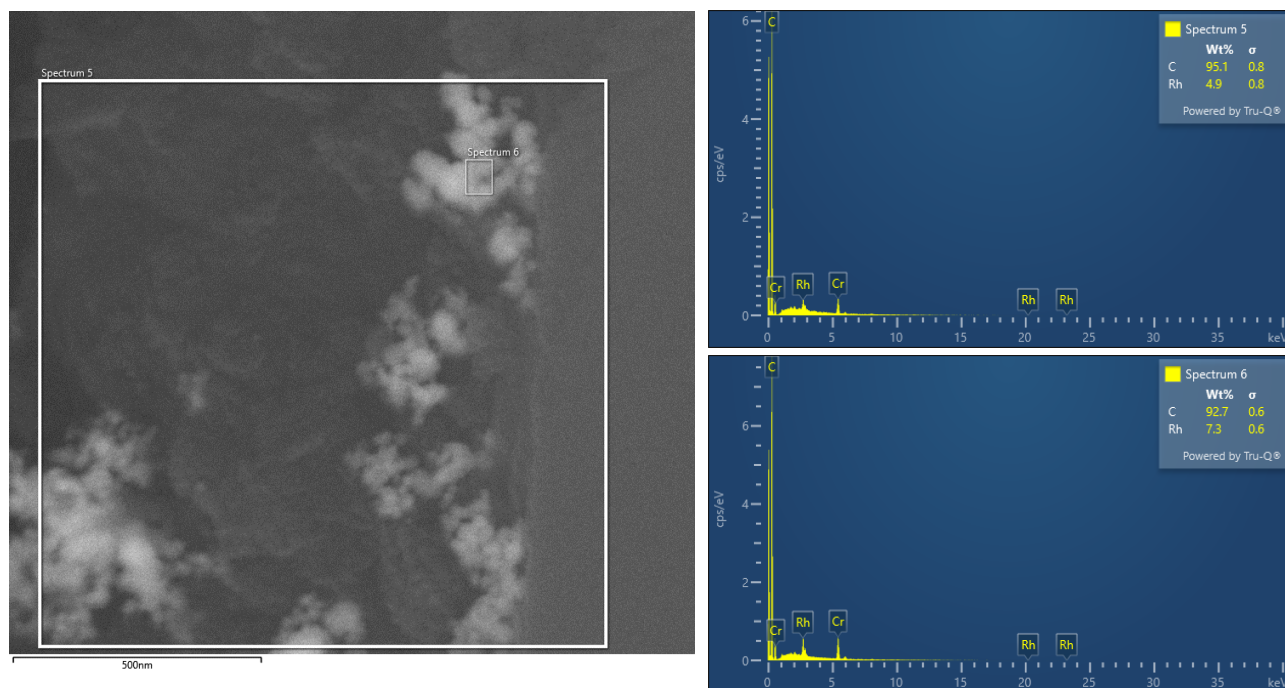


Figure SI-8. FESEM representative image of the Rh/C commercial catalyst after MW-assisted reductive amination of benzaldehyde acquired in BSE (right) mode, in which Rh particle agglomerates appear brighter with respect to the support. EDS spectra of the regions highlighted by the boxes. Reaction conditions: 80 °C, 10 bar H₂, 1 h. The peak related to Cr is due to the metallization procedure.