

Supplementary Information

Table S1. List of metal oxide-supported Ru (5 wt. %) catalysts.

Entry	Catalyst	S_{BET} ($\text{m}^2 \cdot \text{g}^{-1}$)	2a Yield (%)
1	Ru/ γ - Al_2O_3	156	94
2	Ru/ θ - Al_2O_3	84	92
3	Ru/ α - Al_2O_3	15	66
4	Ru/CaO	8	5
5	Ru/MgO	18	53
6	Ru/ ZrO_2	74	90
7	Ru/ CeO_2	69	70
8	Ru/ Nb_2O_5	40	18
9	Ru/ SnO_2	25	0
10	Ru/ZSM-5	295	9
11	Ru/MCM-41	647	9

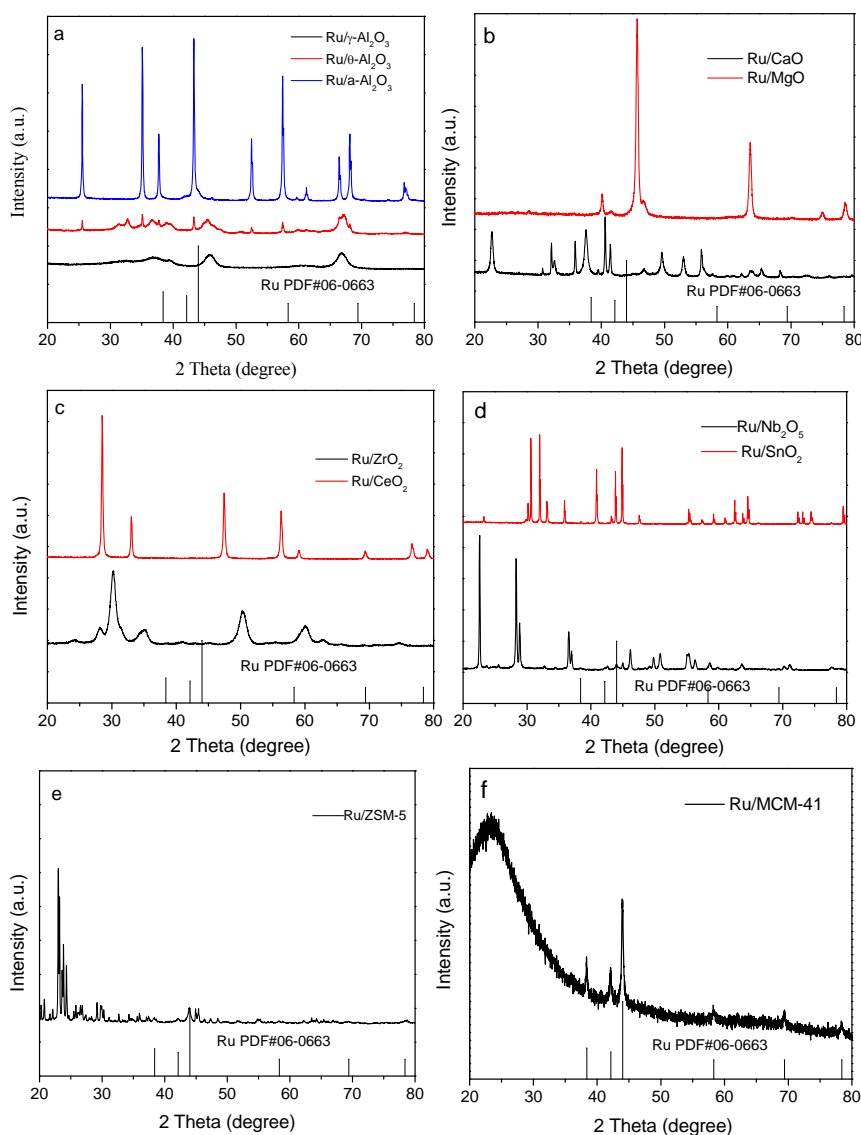


Figure S1. XRD patterns of (a) Ru/ γ - Al_2O_3 , Ru/ θ - Al_2O_3 , Ru/ α - Al_2O_3 , (b) Ru/MgO, Ru/CaO, (c) Ru/ ZrO_2 , Ru/ CeO_2 , (d) Ru/ Nb_2O_5 , Ru/ SnO_2 , (e) Ru/ZSM-5 and (f) Ru/MCM-41.

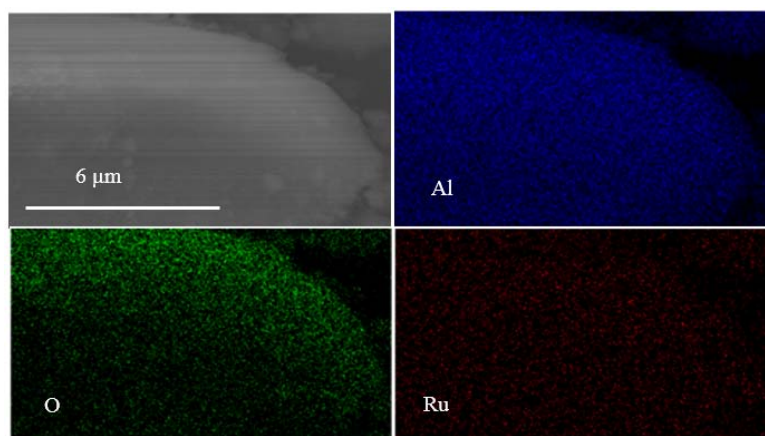


Figure S2. Typical SEM images of Ru/ γ -Al₂O₃ and its images and the corresponding elemental mapping images of Al, O and Ru.

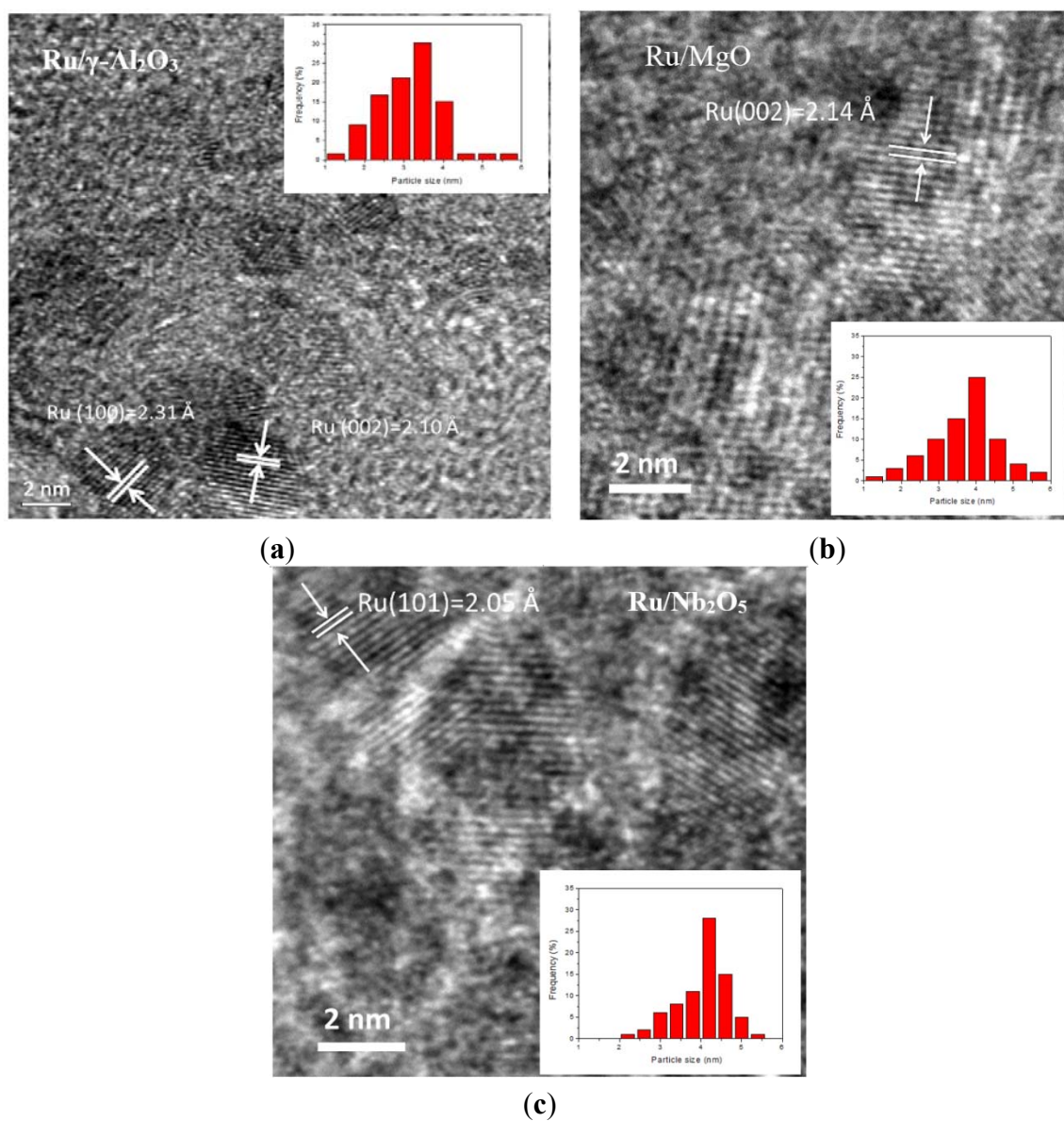


Figure S3. Typical TEM images and particle size distribution of (a) Ru/ γ -Al₂O₃, (b) Ru/MgO and (c) Ru/Nb₂O₅.

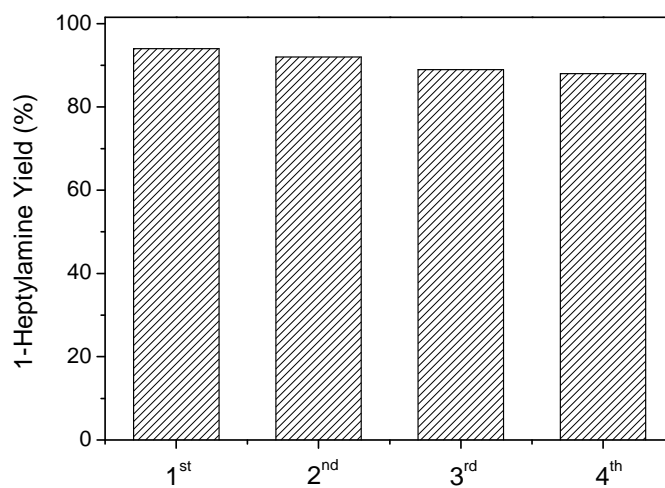


Figure S4. Recycling runs in reductive amination of heptaldehyde in the presence of NH_3 and H_2 with $\text{Ru}/\gamma\text{-Al}_2\text{O}_3$ as catalyst at $80\text{ }^\circ\text{C}$ for 2 h.

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