

Supplementary Materials: Effect of Ru Species on N₂O Decomposition over Ru/Al₂O₃ Catalysts

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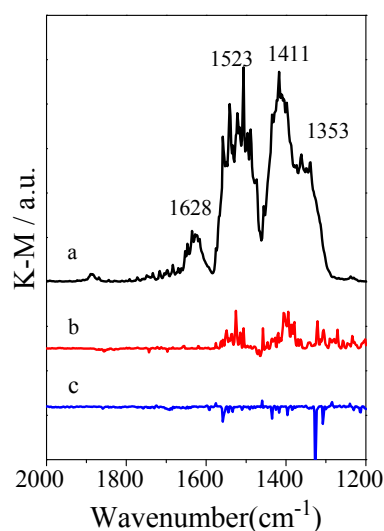


Figure S1. DRIFT spectra of NO adsorption on: (a) Ru/Al₂O₃-NaBH₄ pretreated by 0.5% N₂O for 1 h at 300 °C; (b) Ru/Al₂O₃-NaBH₄; (c) Al₂O₃ at 300 °C.

Table S1. Conversion of N₂O over different catalysts.

Catalysts	Ru Content (%)	T _{50%} (°C)	Reaction Conditions	GHSV (h ⁻¹)	References
Ru/Al ₂ O ₃ -NaBH ₄	0.5	350	5000 ppm N ₂ O	11,000	In this work
	0.95	410	500 ppm N ₂ O, 3%O ₂	56,000	13
Ru/Al ₂ O ₃	2	375	500 ppm N ₂ O	56,000	31
		440	500 ppm N ₂ O, 5%O ₂	56,000	31
Ru/r-TiO ₂	5	260	30,000 ppm N ₂ O	WHSV: 30,000 mL/g ⁻¹ ·h ⁻¹	27
Ru/a-TiO ₂	5	300	30,000 ppm N ₂ O	WHSV: 30,000 mL/g ⁻¹ ·h ⁻¹	27
Ru/MgO	0.93	>500	1000 ppm N ₂ O	24,000	30
Ru/CeO ₂	0.19	480	1000 ppm N ₂ O	24,000	30
Ru/SiO ₂	1.14	350	1000 ppm N ₂ O	24,000	30
Ru/FeR	0.45	340	1500 ppm N ₂ O, 400 ppm NO	60,000	37
Ru/MCM-41	0.20	437	3300 ppm N ₂ O	WHSV: 100,000 mL/g ⁻¹ ·h ⁻¹	38
Ru/Beta	0.29	367	3300 ppm N ₂ O	WHSV: 100,000 mL/g ⁻¹ ·h ⁻¹	38
Rh/Al ₂ O ₃	0.5	340	1000 ppm N ₂ O	10,000	39
Rh/SiO ₂	0.5	372	1000 ppm N ₂ O	26,500	40
Pd/Al ₂ O ₃	0.5	>500	1000 ppm N ₂ O	10,000	39
Pd/CeO ₂	0.5	475	1000 ppm N ₂ O	10,000	39
Pt/CeO ₂	0.5	460	1000 ppm N ₂ O	10,000	39
Pt/Al ₂ O ₃	0.5	>500	1000 ppm N ₂ O	10,000	39
Ir/Al ₂ O ₃	5	375	30,000 ppm N ₂ O	30,000	36