

Ru and RuOx decorated carbon nitride for efficient ammonia photosynthesis

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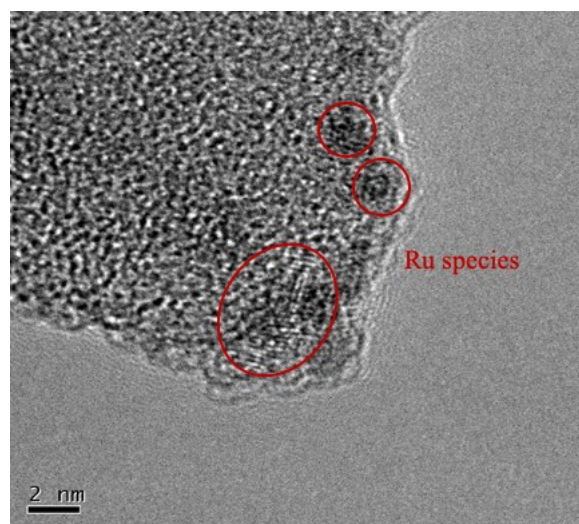


Figure S1. The transmission electron microscopy image of Ru/RuO₂/g-C₃N₄-5%.

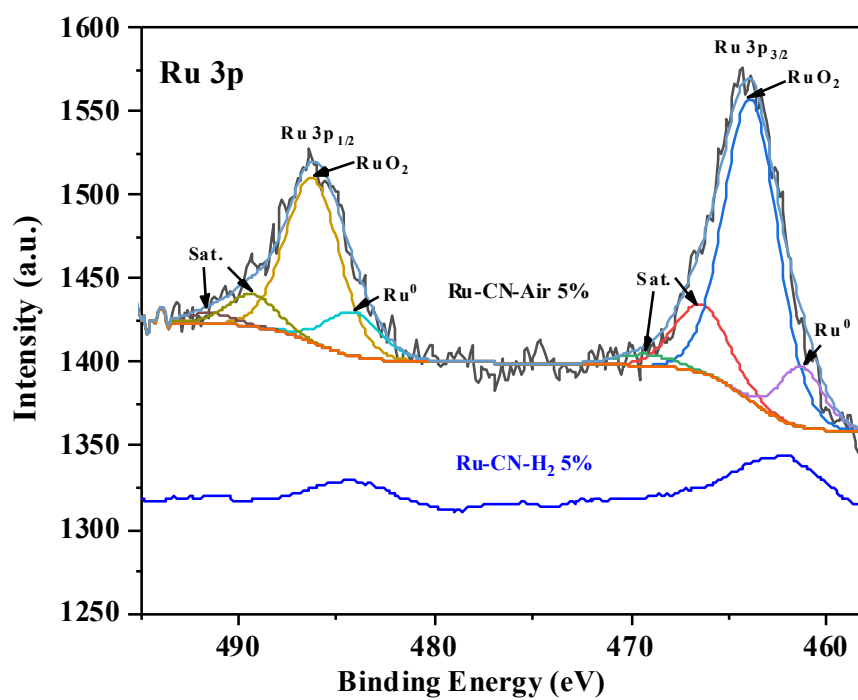


Figure S2. The Ru smoothed spectrum of Ru/RuO₂/g-C₃N₄-5% and Ru/g-C₃N₄-5%.

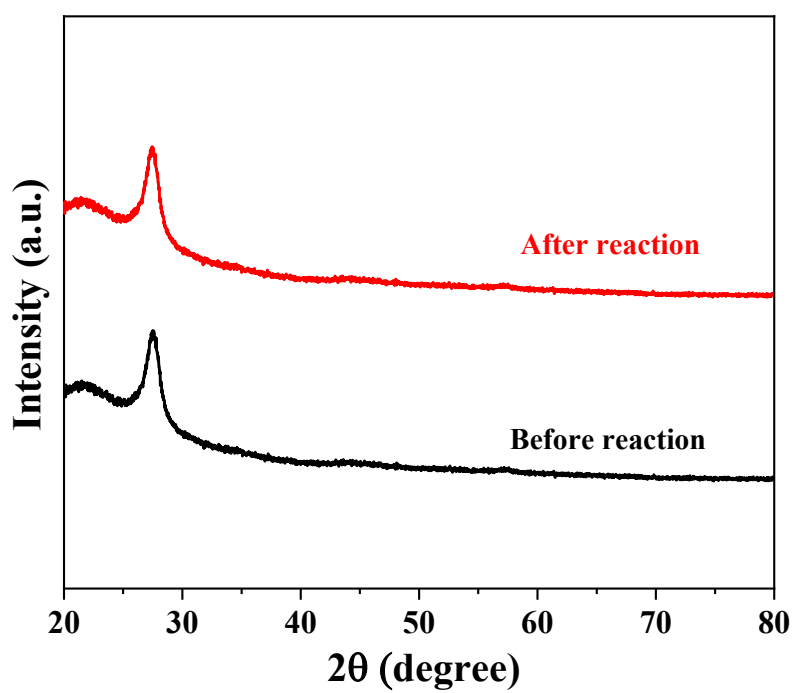


Figure S3. The XRD of Ru/RuO₂/g-C₃N₄-5% before and after reaction.

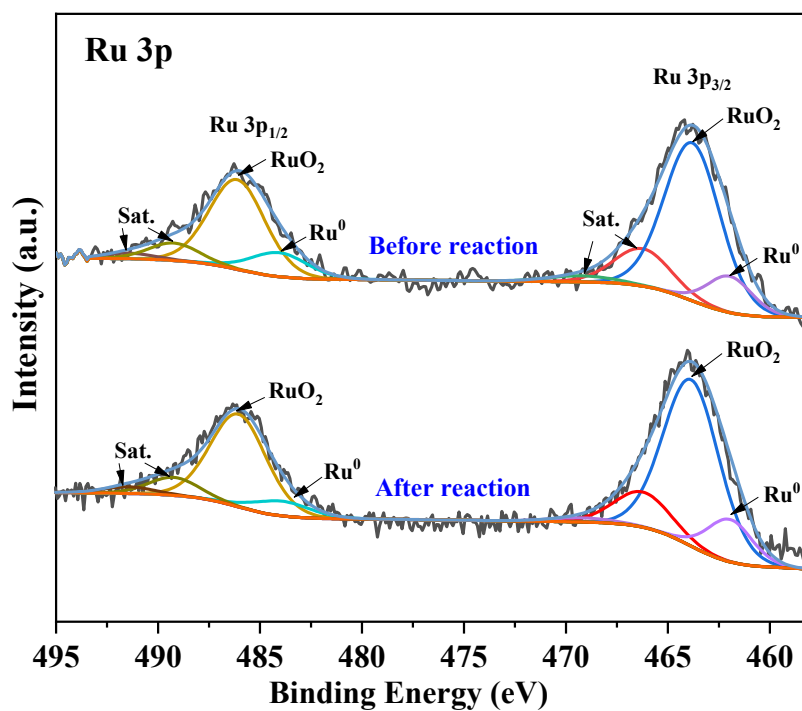


Figure S4. The XPS Ru 3p spectra of Ru/RuO₂/g-C₃N₄-5% before and after reaction.

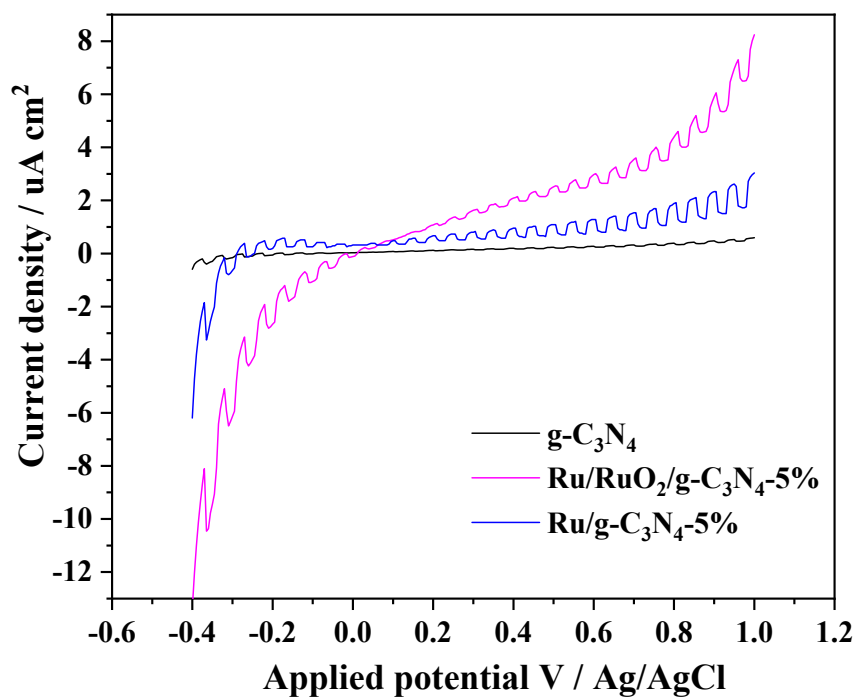


Figure S5. The photocurrent of g-C₃N₄, Ru/g-C₃N₄-5% and Ru/RuO₂/g-C₃N₄-5%.

Table S1. Literature comparison of photocatalytic nitrogen reduction using iron chromatography measurement.

Year	Catalyst	Reaction medium	Light source	Ammonia yield ($\mu\text{mol/g/h}$)	Ref.
2019	Ru/CNs	N ₂ , H ₂ O	300 W xenon lamp	55.25	¹
2020	Ru/TiO ₂	N ₂ , H ₂ O	300 W xenon lamp (Beijing Education Au- light)	5.2	²
	Ru/RuO ₂ /g-C ₃ N ₄	N ₂ , H ₂ O, methanol	300 W xenon lamp (Perfectlight)	13.3	This work

Reference

1. A. Awati, H. Maimaiti, S. Wang and B. Xu, Photo-derived fixation of dinitrogen into ammonia at ambient condition with water on ruthenium/coal-based carbon nanosheets. *Sci. Total Environ.* 2019, **695**, 133865.
2. Y. Liao, J. Lin, B. Cui, G. Xie and S. Hu, Well-dispersed ultrasmall ruthenium on TiO₂ (P25) for effective photocatalytic N₂ fixation in ambient condition. *J. Photochem. Photobiol. A Chem.* 2010, **387**, 112100.