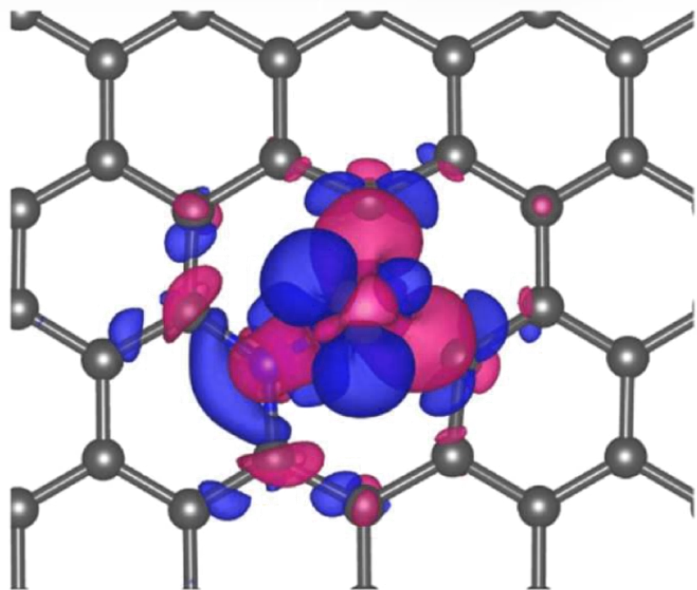


Scientists Discover New Electrocatalyst to Convert CO₂ to CO



The single Ni atom catalyst in the center of a graphene nanosheet (gray). The blue and magenta bubbles show the charge exchange in the reduction reaction to create CO.

K. Jiang, S. Siahrostami, T. Zheng, Y. Hu, S. Hwang, E. Stavitski, Y. Peng, J. J. Dynes, M. Gangishetty, D. Su, K. Attenkofer and H. Wang, *Energy Environ. Sci.*, **11**, 893-903 (2018).

Work was performed in part at Brookhaven National Laboratory

Scientific Achievement

A newly designed electrocatalyst – single Ni atoms on a graphene nanosheet – efficiently converted CO₂ to CO, while suppressing the competing hydrogen evolution reaction.

Significance and Impact

This development opens possibilities for efficient and cost-effective CO₂ conversion, which traditional electrocatalysts cannot offer.

Research Details

- Ni atoms were embedded on graphene nanosheet.
- X-ray characterization at NSLS-II & CLS was used to study the atomic and electronic structure of the Ni atoms during CO₂ conversion.
- The ISS beamline was used at NSLS-II for x-ray absorption spectroscopy
- Theoretical calculations agreed with the measured results.