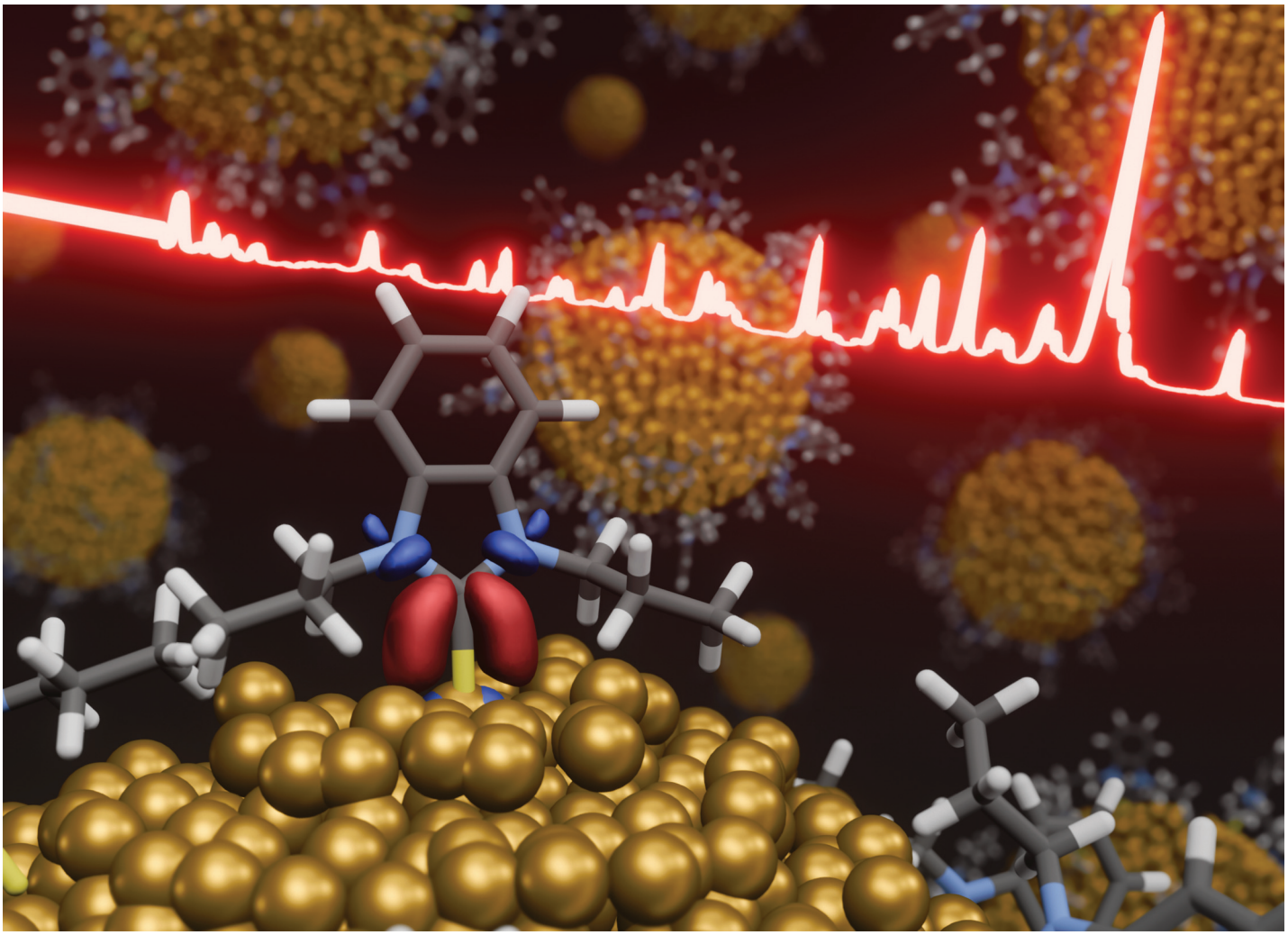
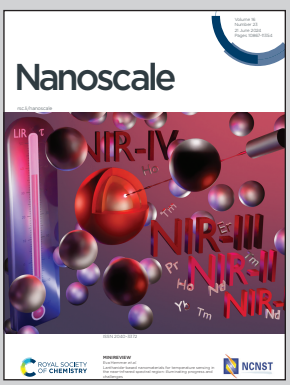


Showcasing research from Professor Mathieu Frenette and Professor Ali Nazemi's laboratory, Department of Chemistry, Université du Québec à Montréal, Québec, Canada.

Insight into the nature of carbon–metal bonding for *N*-heterocyclic carbenes in gold/silver complexes and nanoparticles using DFT-correlated Raman spectroscopy: strong evidence for π-backbonding

N-Heterocyclic carbenes (NHCs) are promising ligands for stabilizing metallic complexes, nanostructures, and surfaces. The carbon–metal bond in NHCs crucially affects the material's properties. Raman detection reveals NHC–Au/Ag bond-stretching vibrations inaccessible to standard infrared spectroscopy. Investigating conflicting reports on π-backbonding, we confirm its existence *via* analysis of C=N stretching decrease and EDA-NOCV calculations. NPs exhibit weaker π-backbonding, partially explaining weaker NHC–NP bonds than in metallic complexes.

As featured in:



See Ali Nazemi, Mathieu Frenette *et al.*, *Nanoscale*, 2024, **16**, 11052.

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