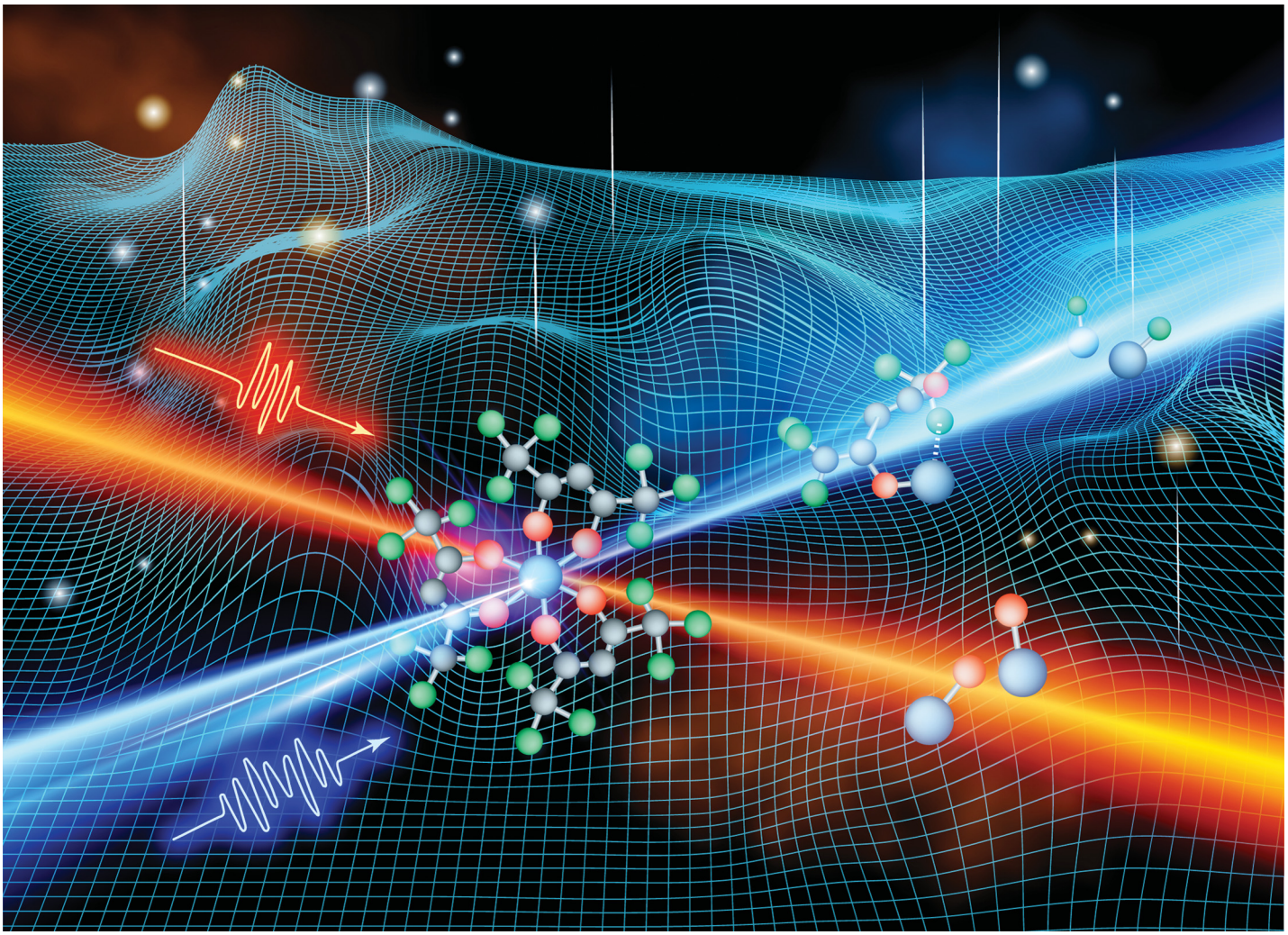

Showcasing research from Professor Rabitz's laboratory, Department of Chemistry, Princeton University, Princeton, NJ, United States.

Ultrafast control of the LnF^+/LnO^+ ratio from $Ln(hfac)_3$

Controlled fragmentation of lanthanide complexes by shaped ultrafast laser pulses with control mechanistic elucidation.

Shaped ultrafast laser pulses can be used to optimally control molecules to yield different products. In this work, a lanthanide complex $Ln(hfac)_3$ was studied. Broad shaped pulses favor the yield of LnF^+, which involves metal–ligand bond-breaking followed by bond rotation and bond rearrangement, while short pulses favor the formation of LnO^+. The control pulse slicing technique, producing a temporal animation of species population, was applied to elucidate the dynamics induced by fields that either maximize or minimize the LnF^+/LnO^+ ratio.

As featured in:

See Herschel Rabitz *et al.*, *Phys. Chem. Chem. Phys.*, 2024, **26**, 15850.

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