

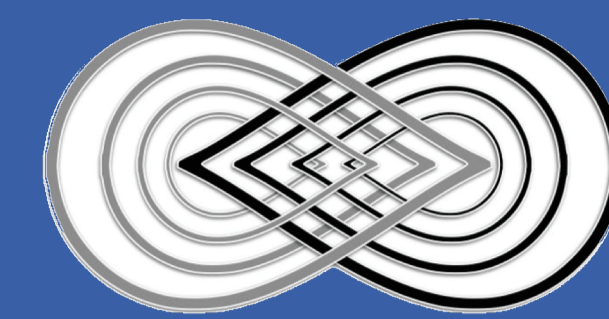
Sequestration and Activation: From Bio-inspired Weak Interactions to SO₂ Coupled Electron Transfer

Raja Angamuthu Lab Activities

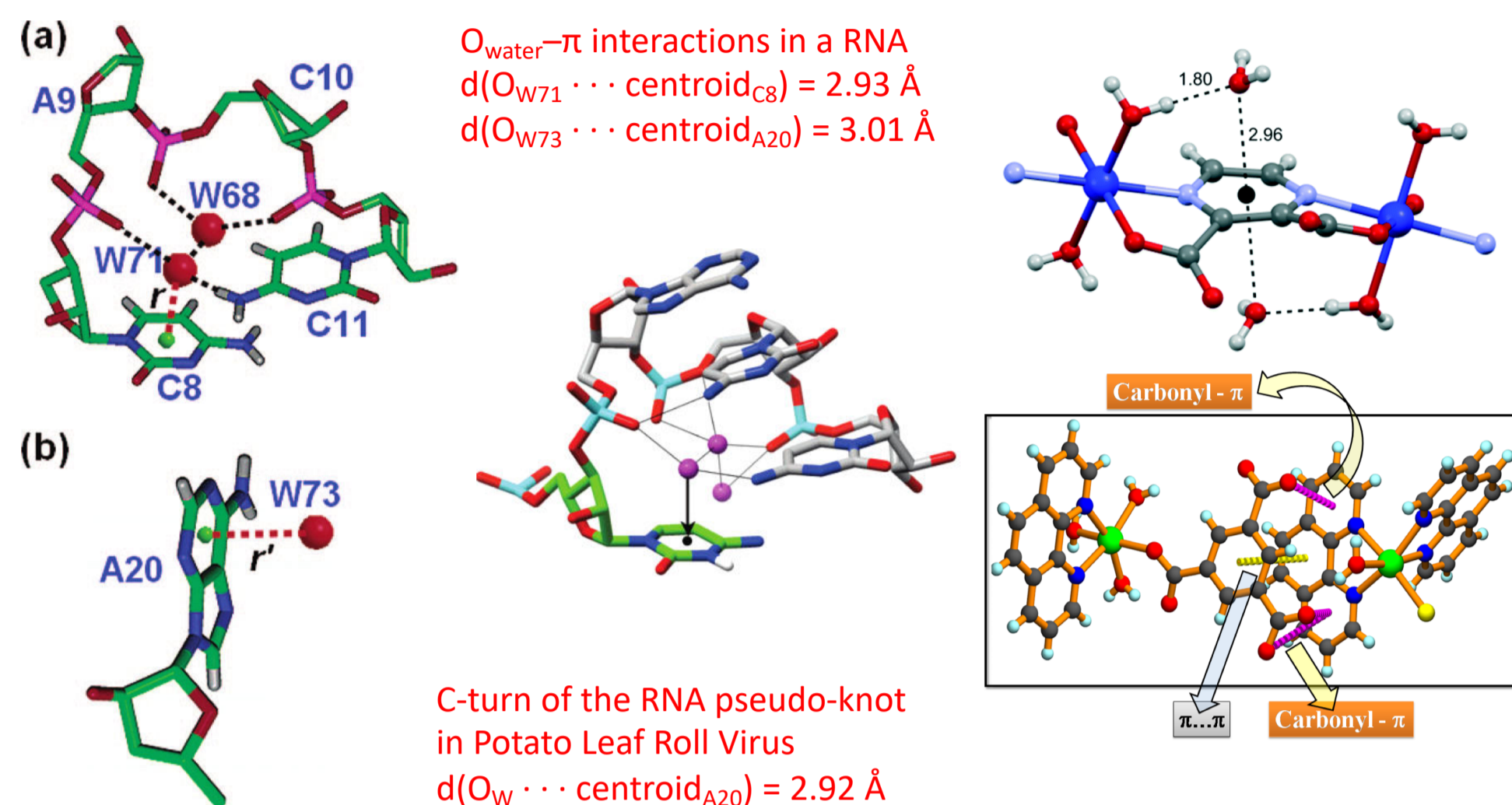
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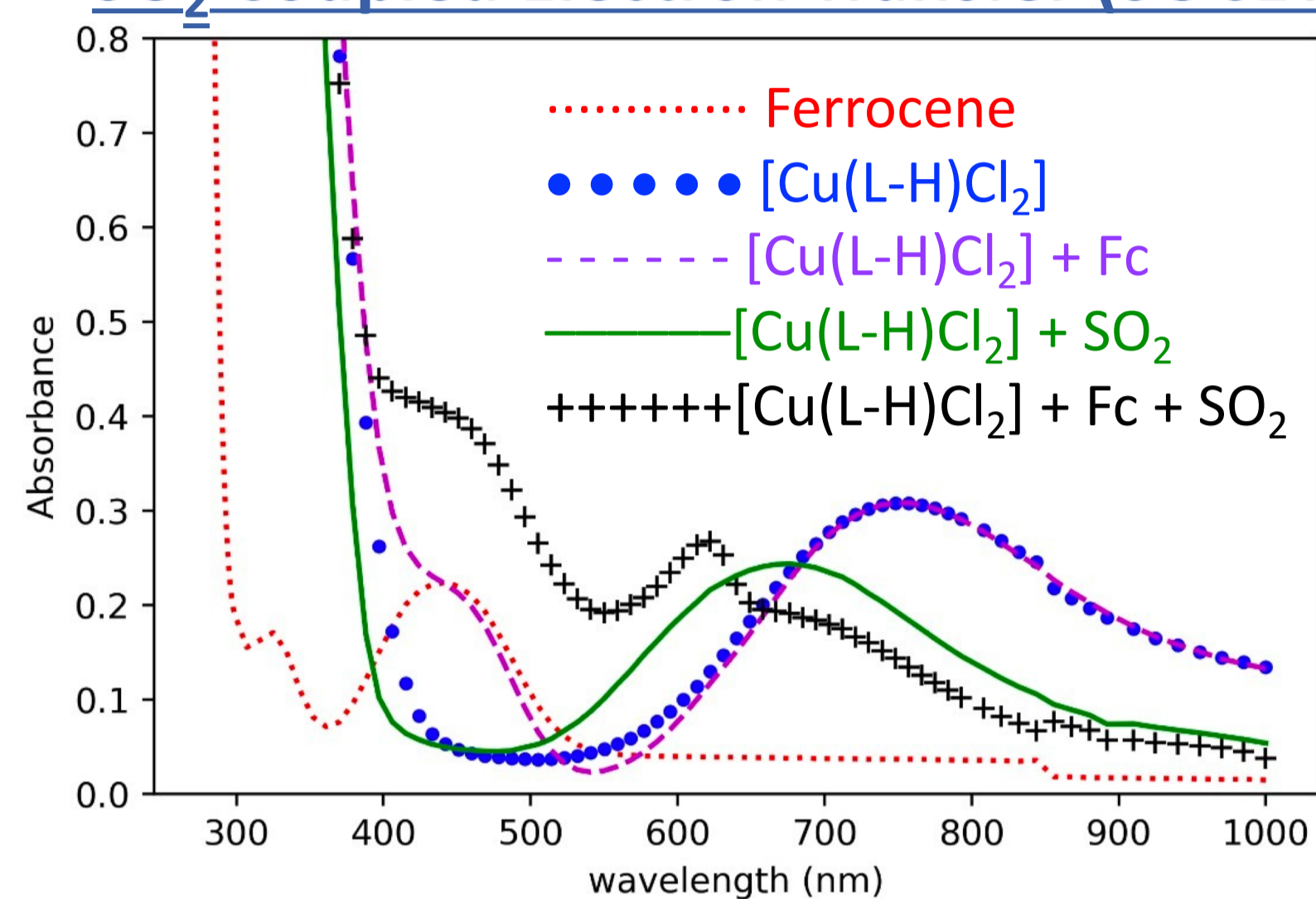
Department of Sustainable Energy Engineering, Indian Institute of Technology Kanpur, INDIA



Lone Pair... π Interactions in Nature and in Lab



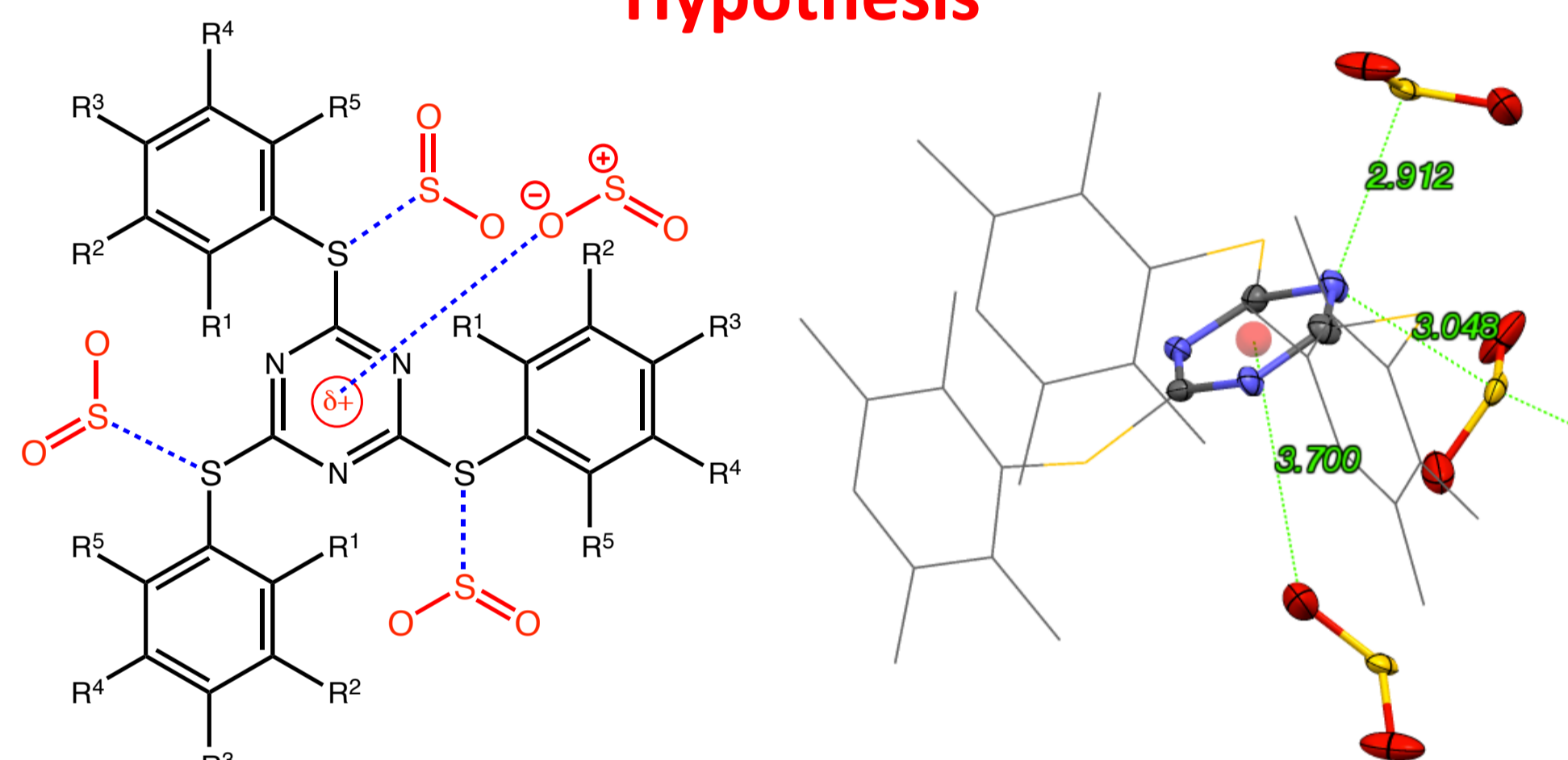
SO₂ Coupled Electron Transfer (SOCET)



Green Chem. 2019, 21, 6372-6380.

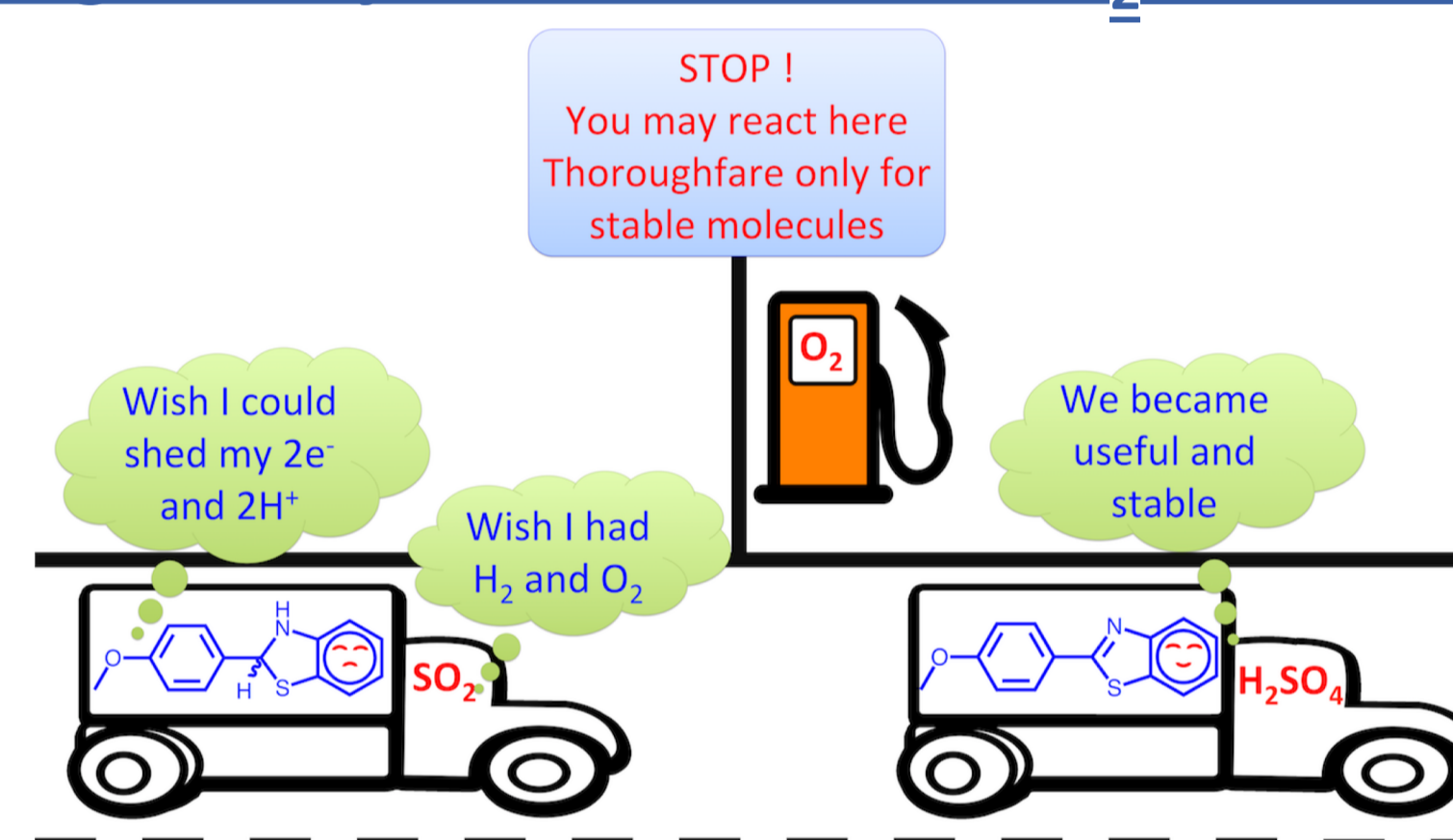
Strong Enough to Capture/Weak Enough to Loose

Hypothesis



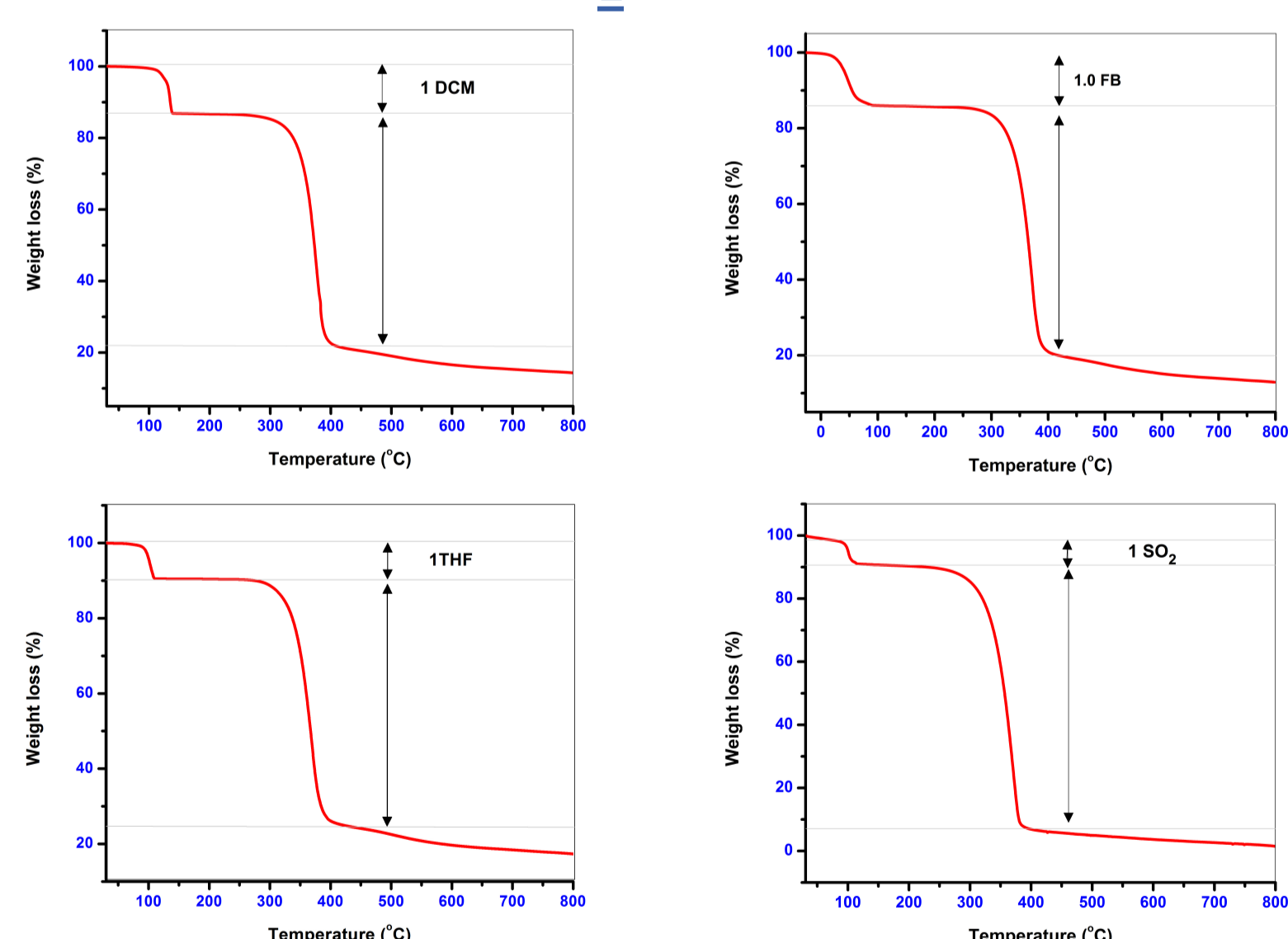
Chem. Commun. 2022, 58, 11815-11818.

Organic Hydride Donors in SO₂ Activation

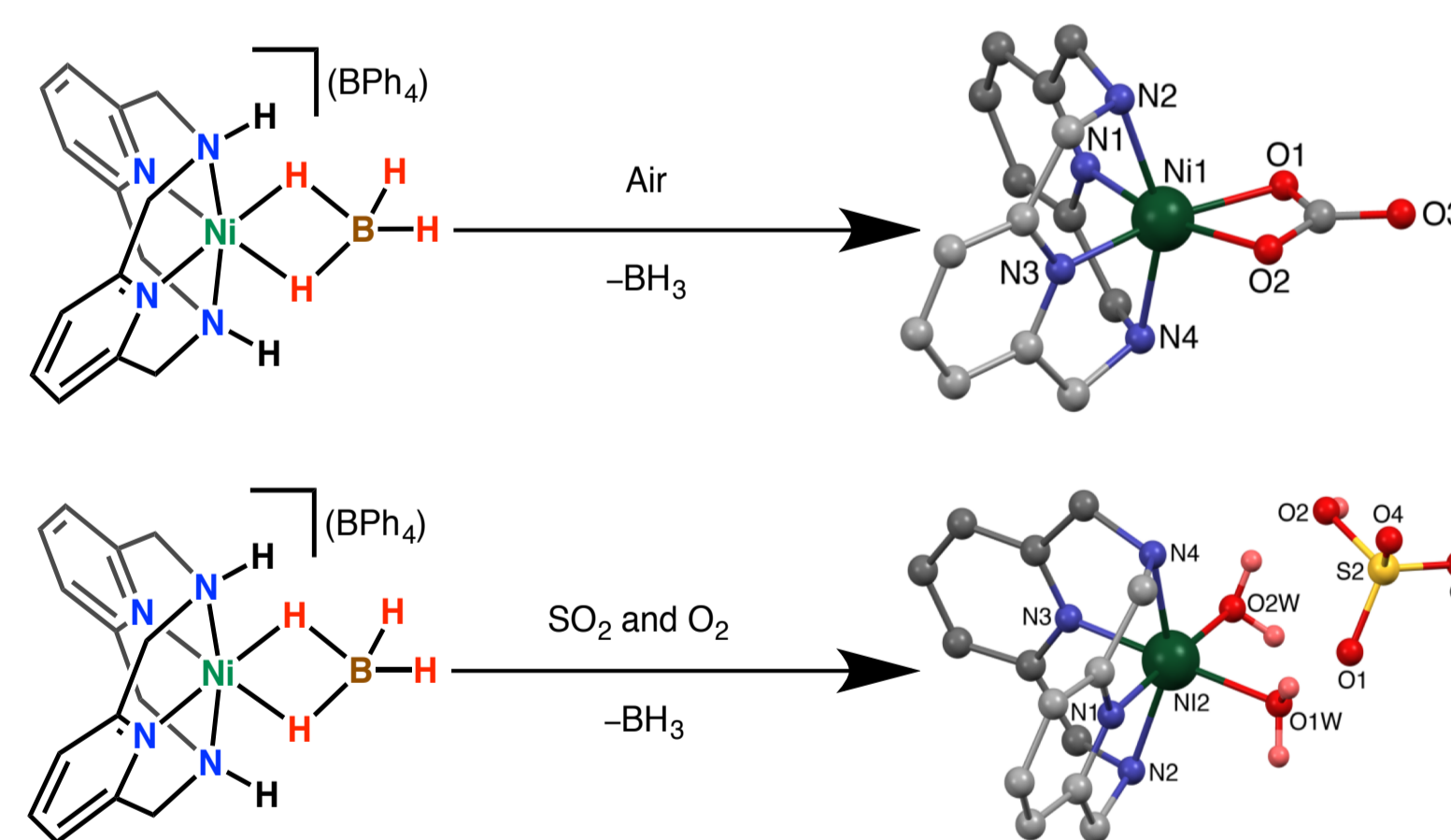


ACS Sus. Chem. Eng. 2016, 4, 6517-6523.
 ACS Sus. Chem. Eng. 2017, 5, 6322-6328.

Capture of SO₂ and Halocarbons

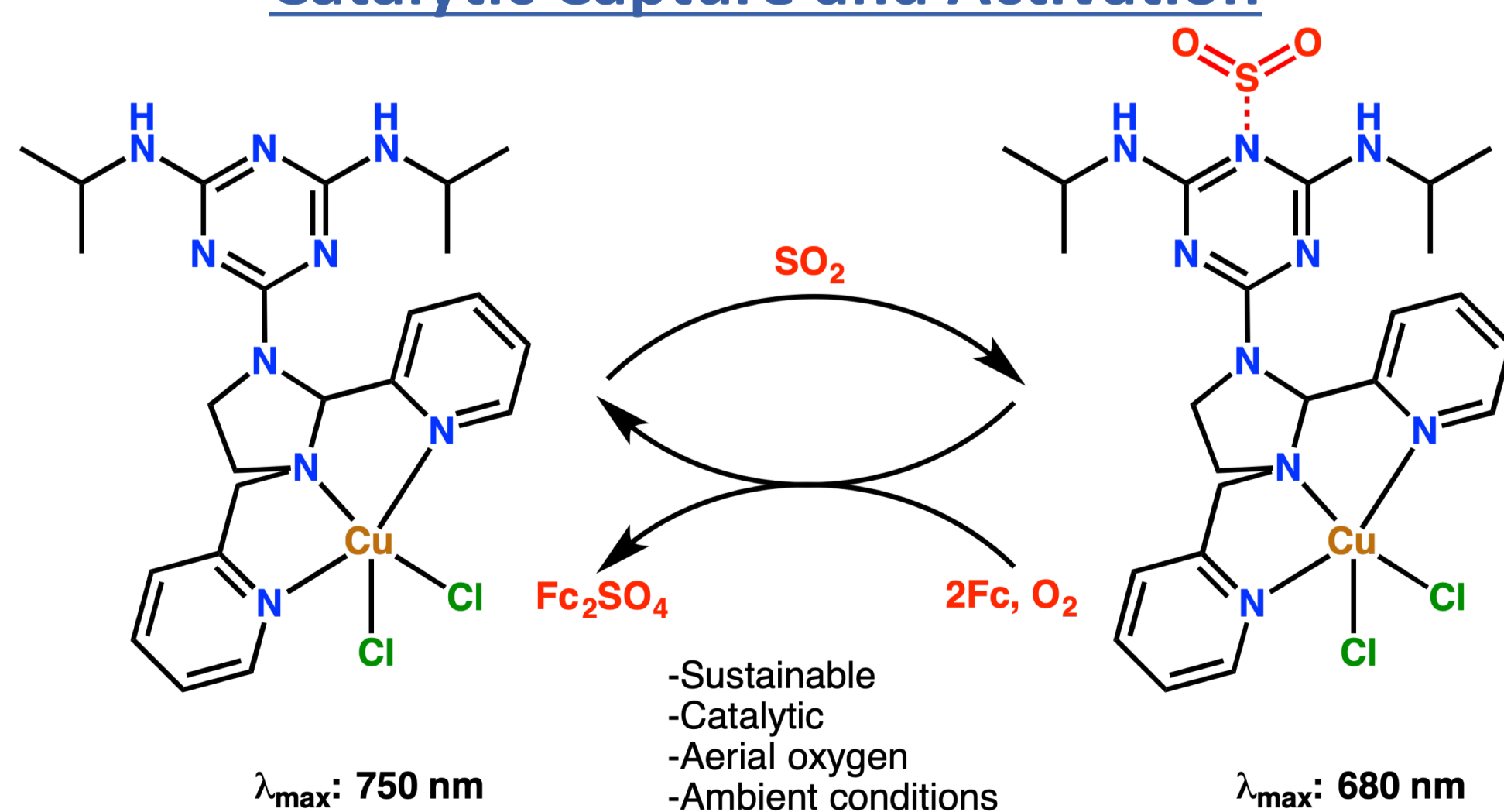


Greener Metal Hydrides in CO₂ and SO₂ Activation



Green Chem. 2019, 21, 2752-2758.

Catalytic Capture and Activation



Green Chem. 2019, 21, 6372-6380.

Summary

- Bioinspired weak interactions are useful in capture of SO₂.
- Combining triazine backbone with koneramine complexes paved the way to catalytically activate SO₂.
- Simple organic hydride were used in the sustainable stoichiometric activation.
- Air-stable metal hydrides that were synthesised in solvent free reactions activate many small molecules including CO₂ and SO₂.

Acknowledgement

Sakthi Rajee, Sonam Mehrotra, Manoj Chahal and Gopichand Kotana are acknowledged for their contributions. SERB-DST, BRNS and MoES, India sponsored the research.