This LO was created in honor of Dr Vivian W.-W. Yam’s 2022 ACS National Award, the Josef Michl ACS Award in Photochemistry. You can read a Q&A with Dr. Yam here:

*Energy & Fuels*, **2021**, *35*, 18845-18847

<https://pubs.acs.org/doi/10.1021/acs.energyfuels.1c03289>

The questions below refer to the following 2020 publication by Dr. Yam and co-workers:

“Toward the Design of Phosphorescent Emitters of Cyclometalated Earth-Abundant Nickel(II) and Their Supramolecular Study”

Yip-Sang Wong, Man-Chung Tang, Maggie Ng, and Vivian Wing-Wah Yam\*

*J. Am. Chem. Soc.* **2020**, *142*, 7638-7646

<https://pubs.acs.org/doi/10.1021/jacs.0c02172>

1. Compounds **1**, **2**, and **3** are Ni(II) species. Describe their ligands in terms of their denticity (e.g. κ1) and their L and X character.
2. What is the d-count (it’s mentioned a lot in the paper!) and the 18-electron count of the species? Is the 18-electron count expected based on geometry?
3. Depictions of the HOMOs and LUMOs of the complexes can be found in the supporting information on pages S19 and S20. Are these orbitals primarily metal-based or ligand-based, or both?
4. Are these complexes high-spin or low-spin? How might you know?
5. What is solvatochromism, a property that was observed for compound **1**?
6. While the crystal structure of **2** was not obtained, it’s calculated structure is shown in Figure 4. What about this species would prevent aggregation or close Ni-Ni contact?
7. What do MLCT, LLCT, IL transition, and MC refer to with regards to UV-Vis spectra?
8. Discuss the evidence of the aggregation for **3**. Which data do you find to be most supportive of showing the aggregation?
9. How might you modify the ligand of compound **3** to prevent aggregation?