

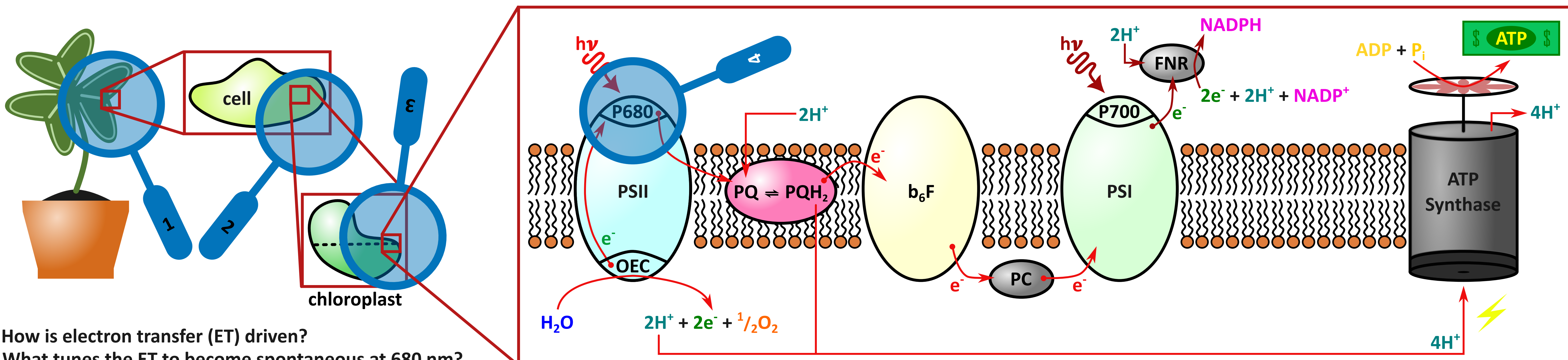
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How Life Makes Energy

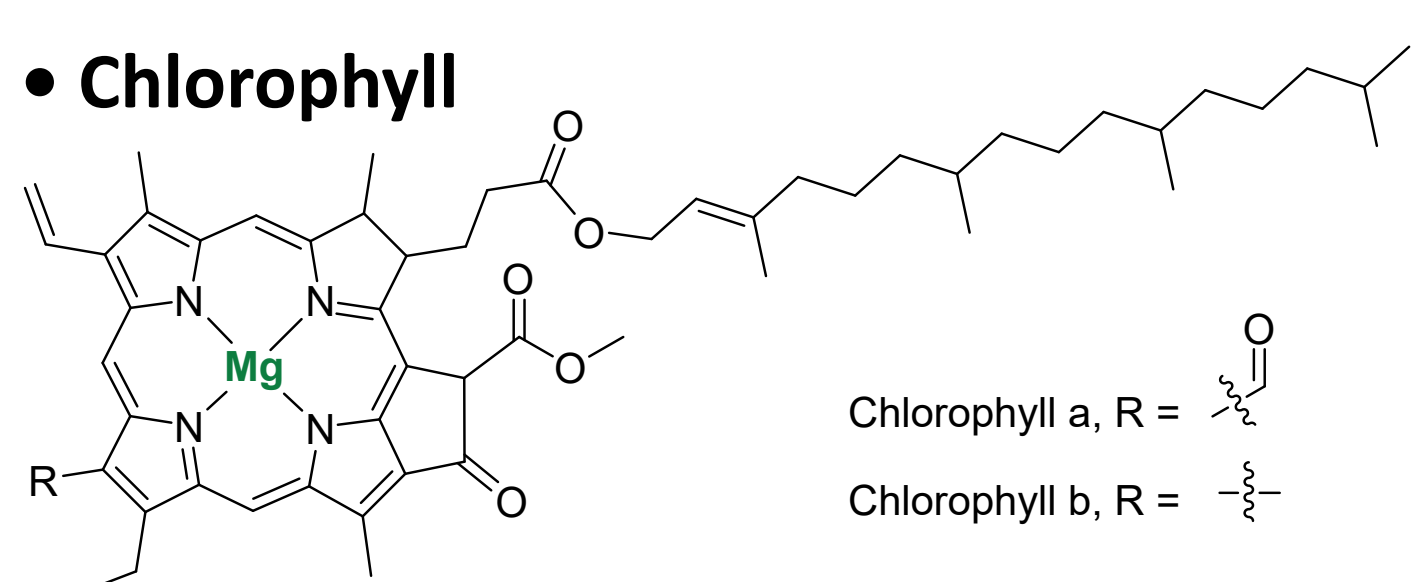
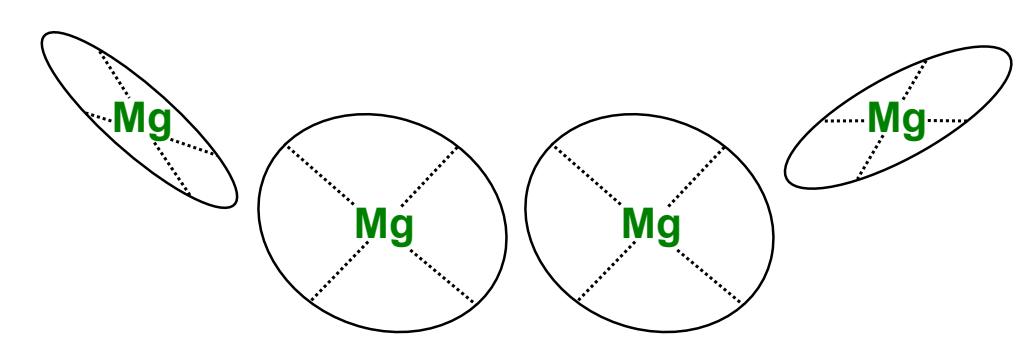
Photosynthesis ($6\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{h\nu} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$) is a commonplace reaction in plants using photosystem II (PSII). It is suspected the reaction is driven via peripheral charges around the reaction centre P680. In this work this hypothesis is tested using simple mimic molecules that resemble P680 with novel metal binding sites to simulate peripheral charge.



How is electron transfer (ET) driven?
What tunes the ET to become spontaneous at 680 nm?

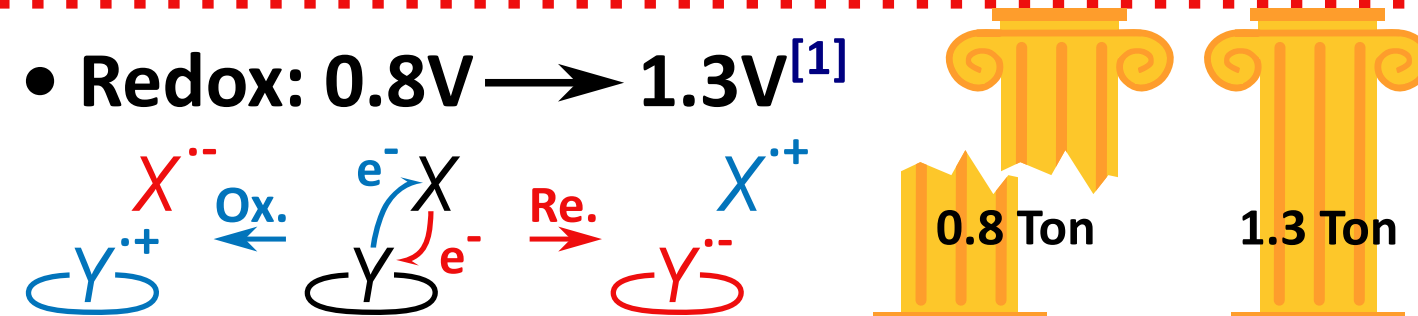
Mimicking The Start

- P680 \approx 4x Chlorophyll-*a*
- Chlorophyll

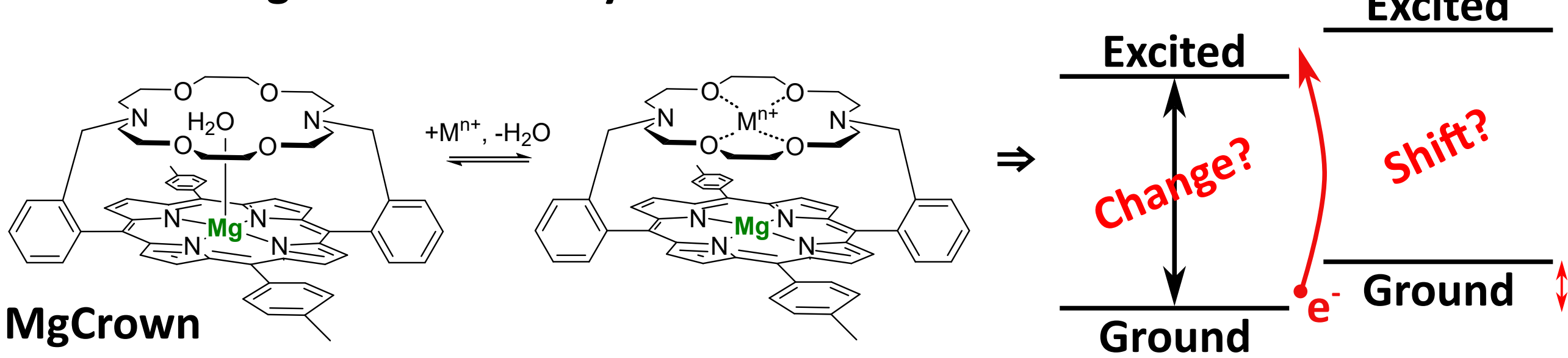


\Rightarrow Proximity and protein charges

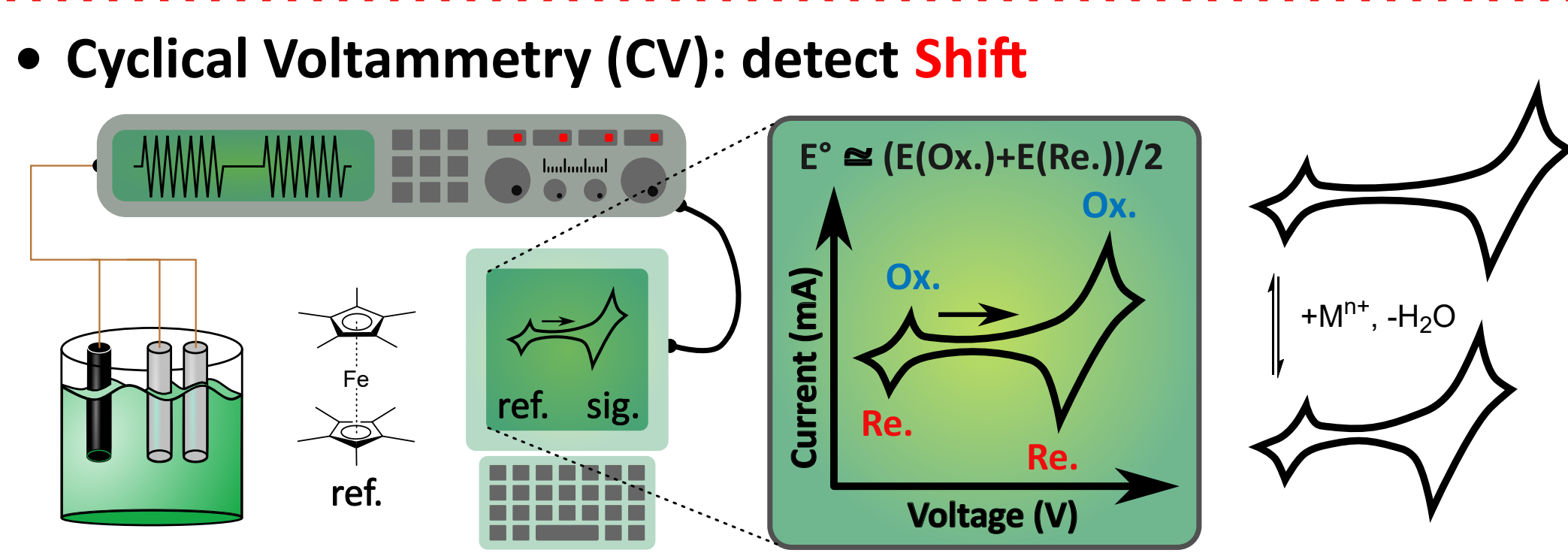
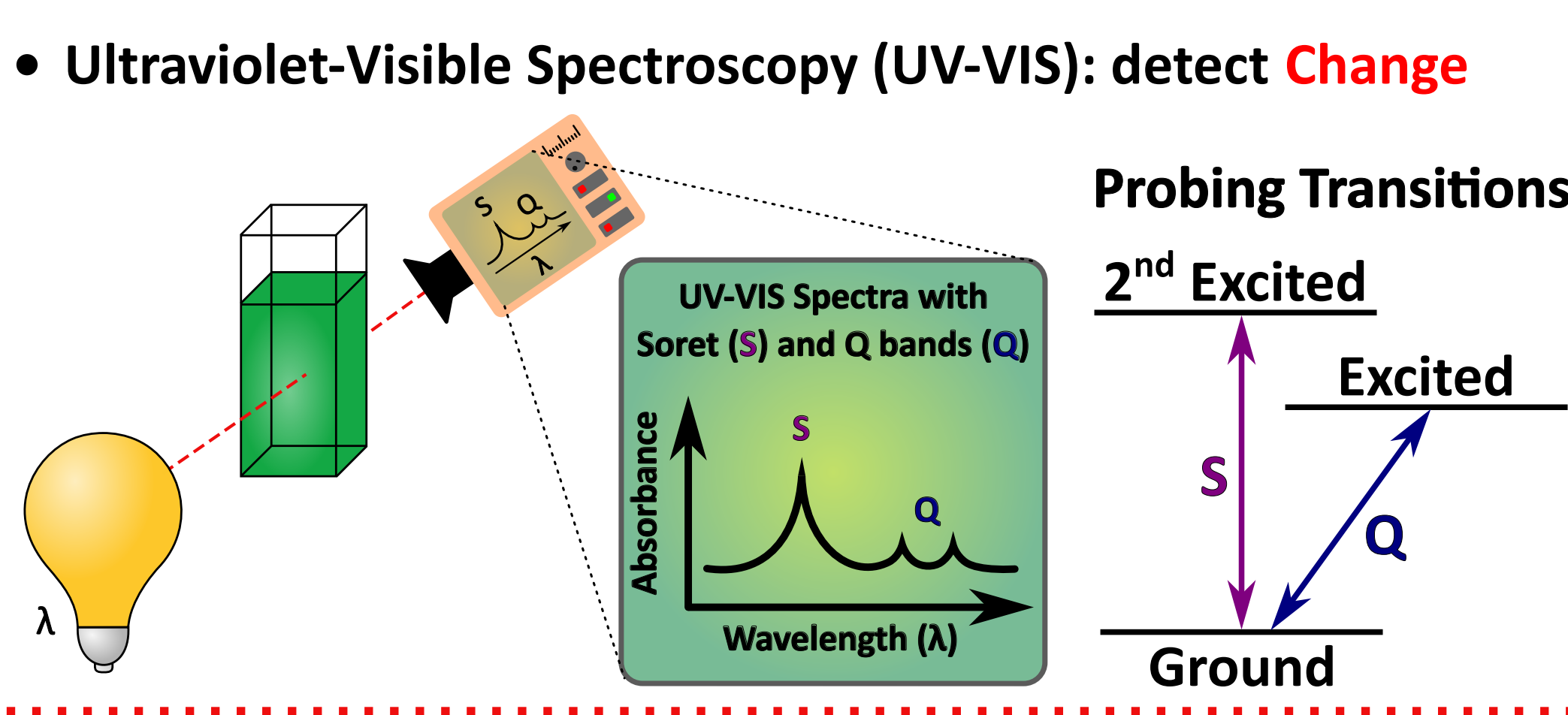
- Oxidation of chlorophyll-*a*, higher in P680 than outside?



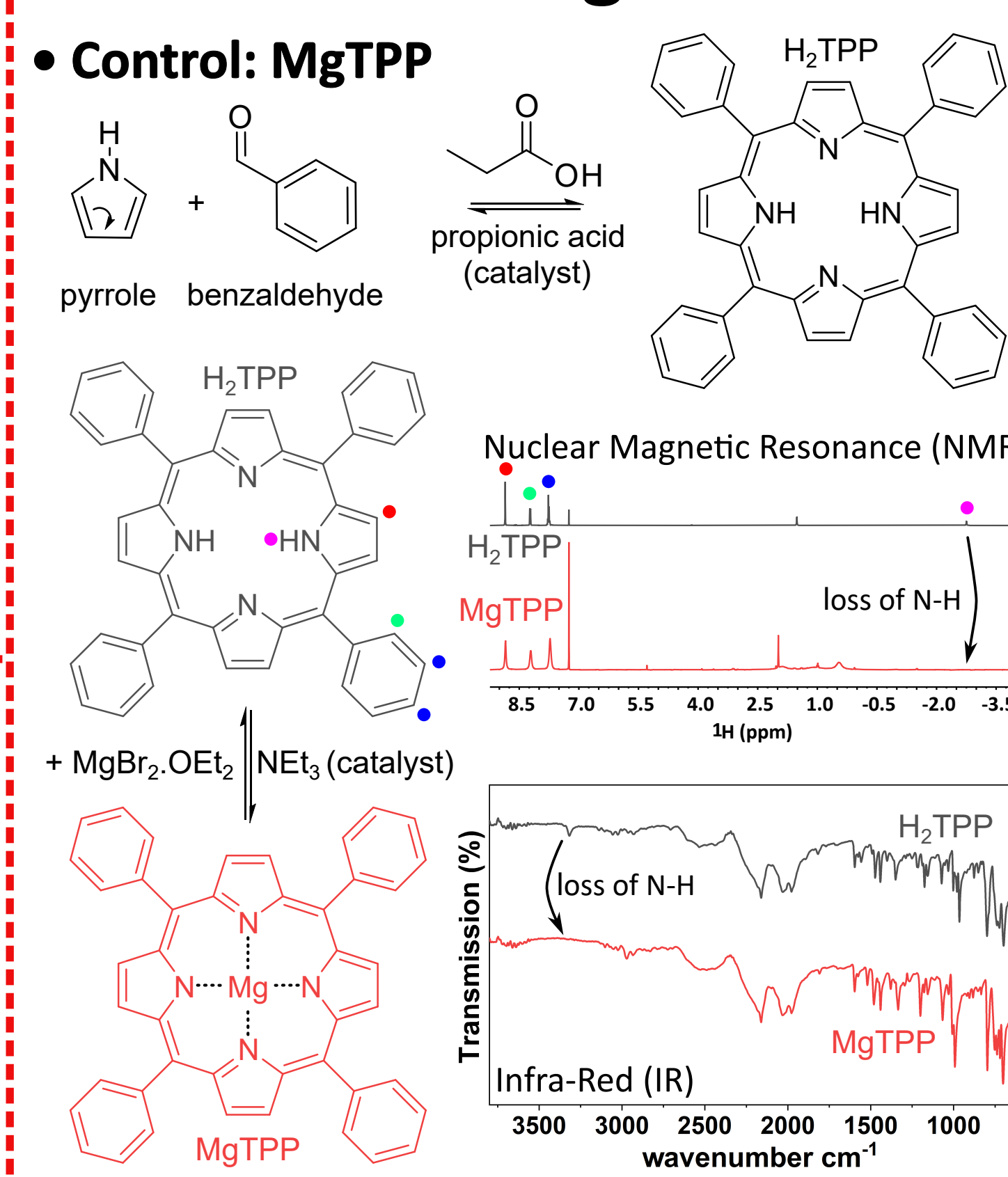
- Mimic charge distribution by metal insertion^[2]



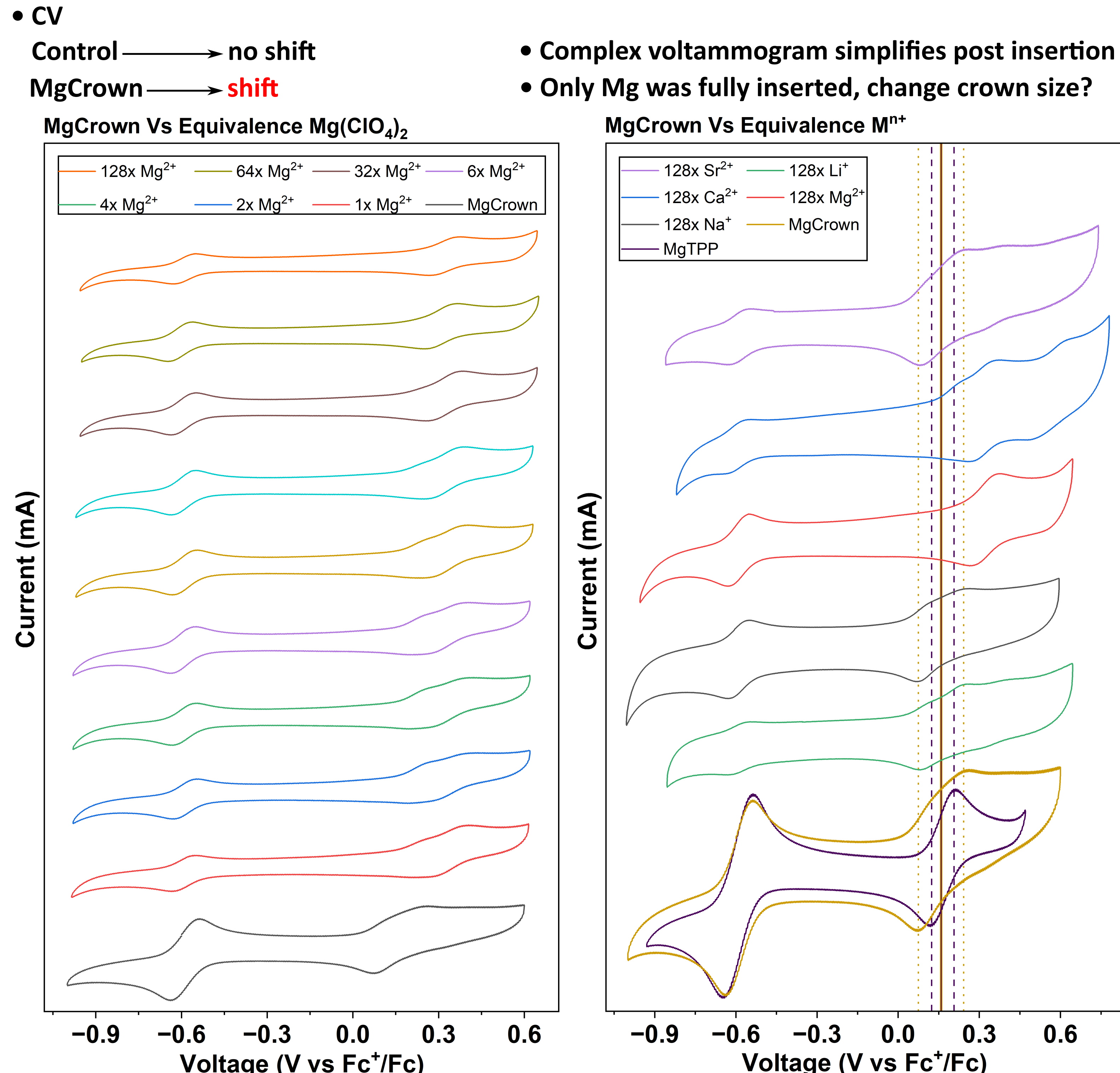
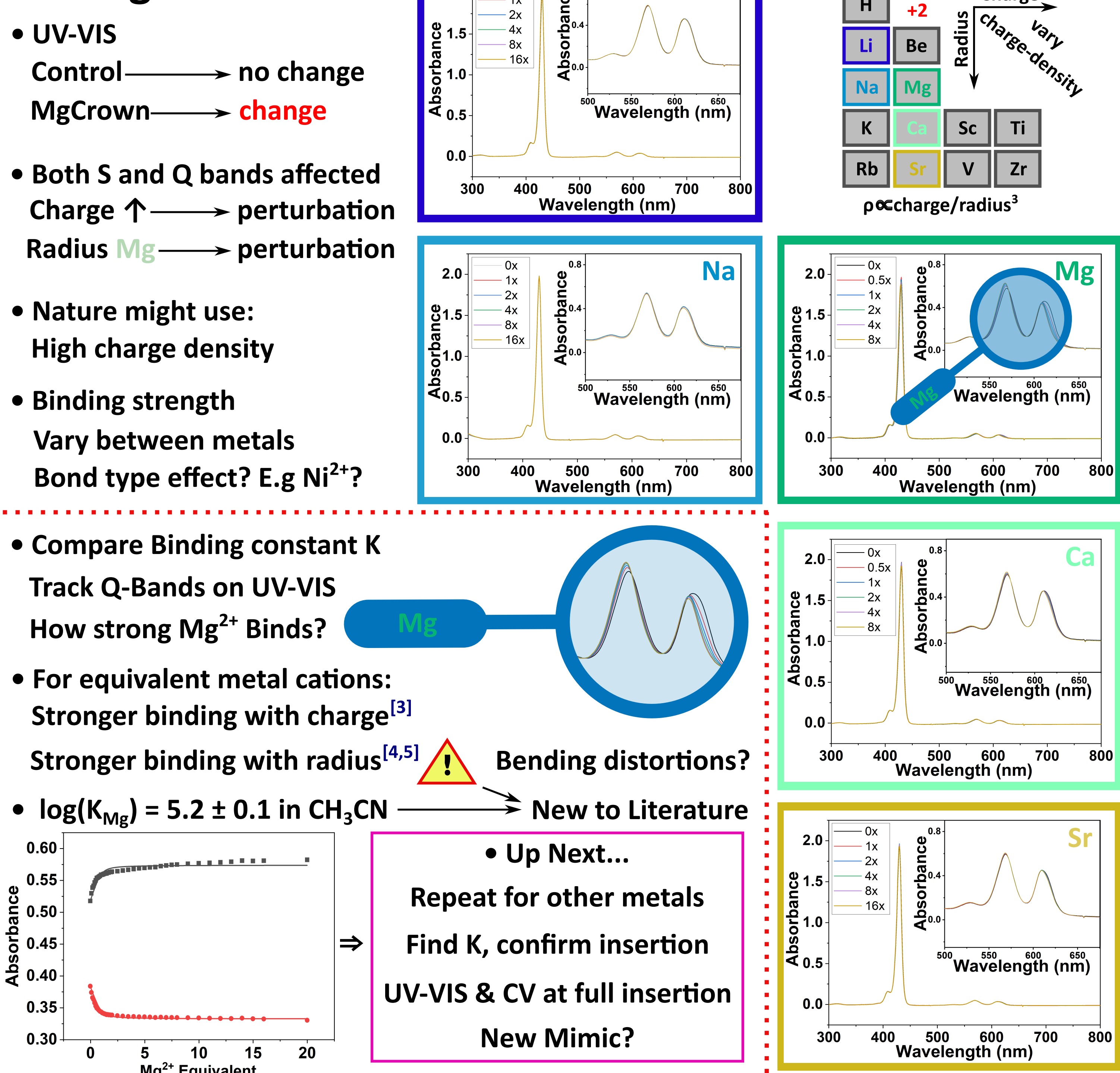
How to Peek



Making of Mimics



Findings



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- Further instrumental facilities at the School of Chemistry, Trinity College Dublin

Network



LinkedIn

References

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- [5] H-I Buschmann, *J. Sol. Chem.*, 15, 6, 1987, p. 453–461.