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Synthesis of Pt-Ni nano octahedra

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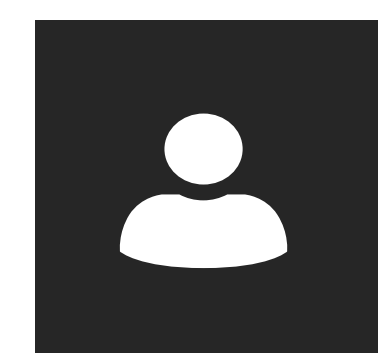
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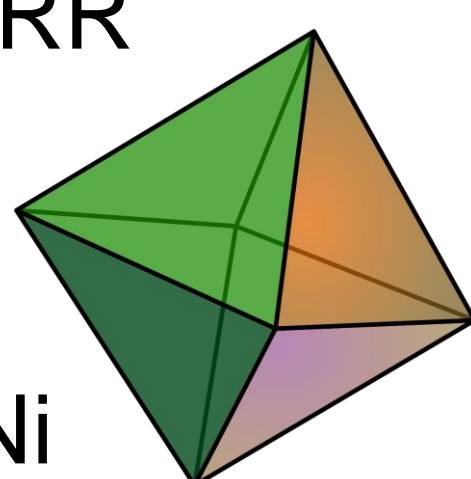
Synthesis of Pt-Ni nano octahedra



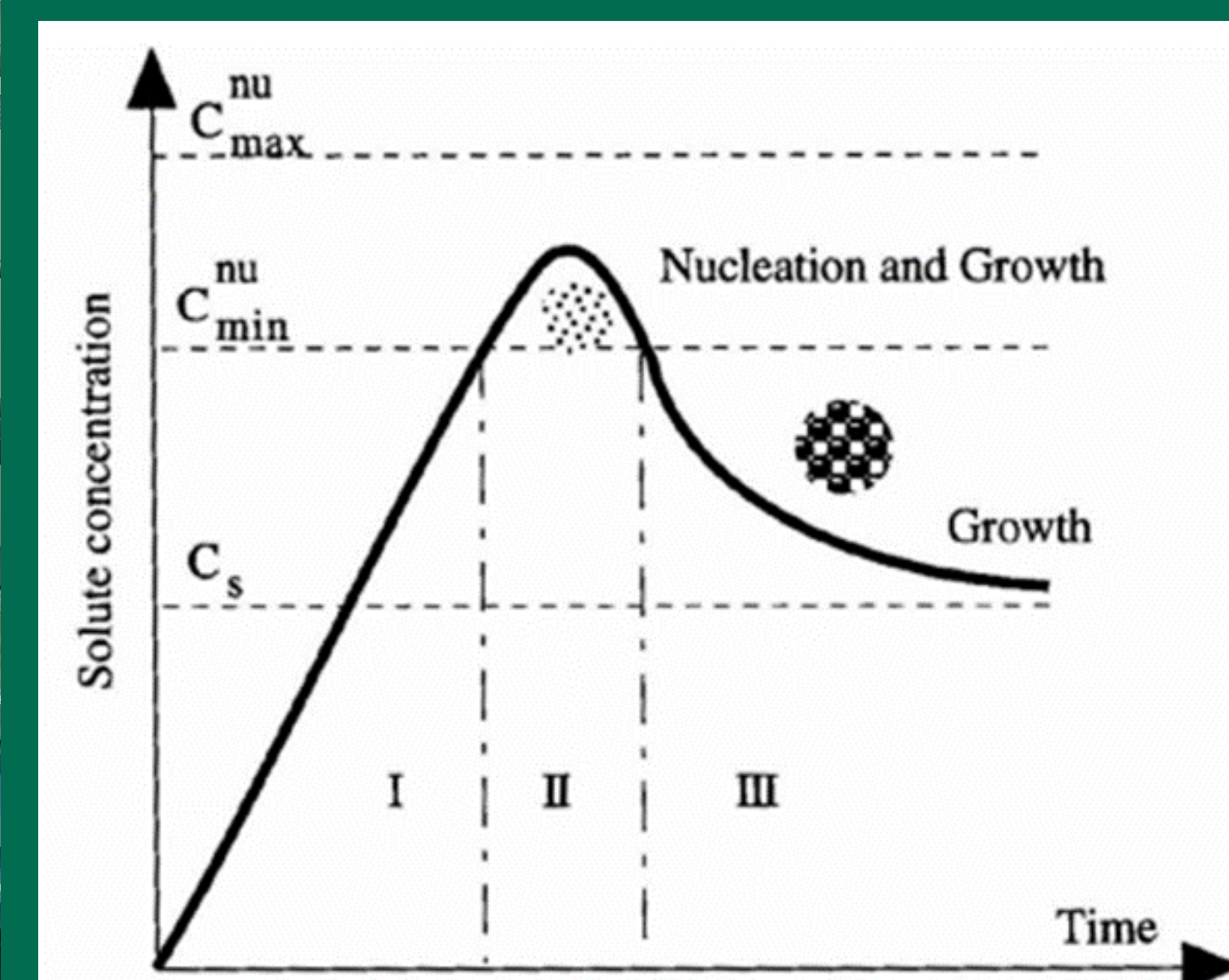
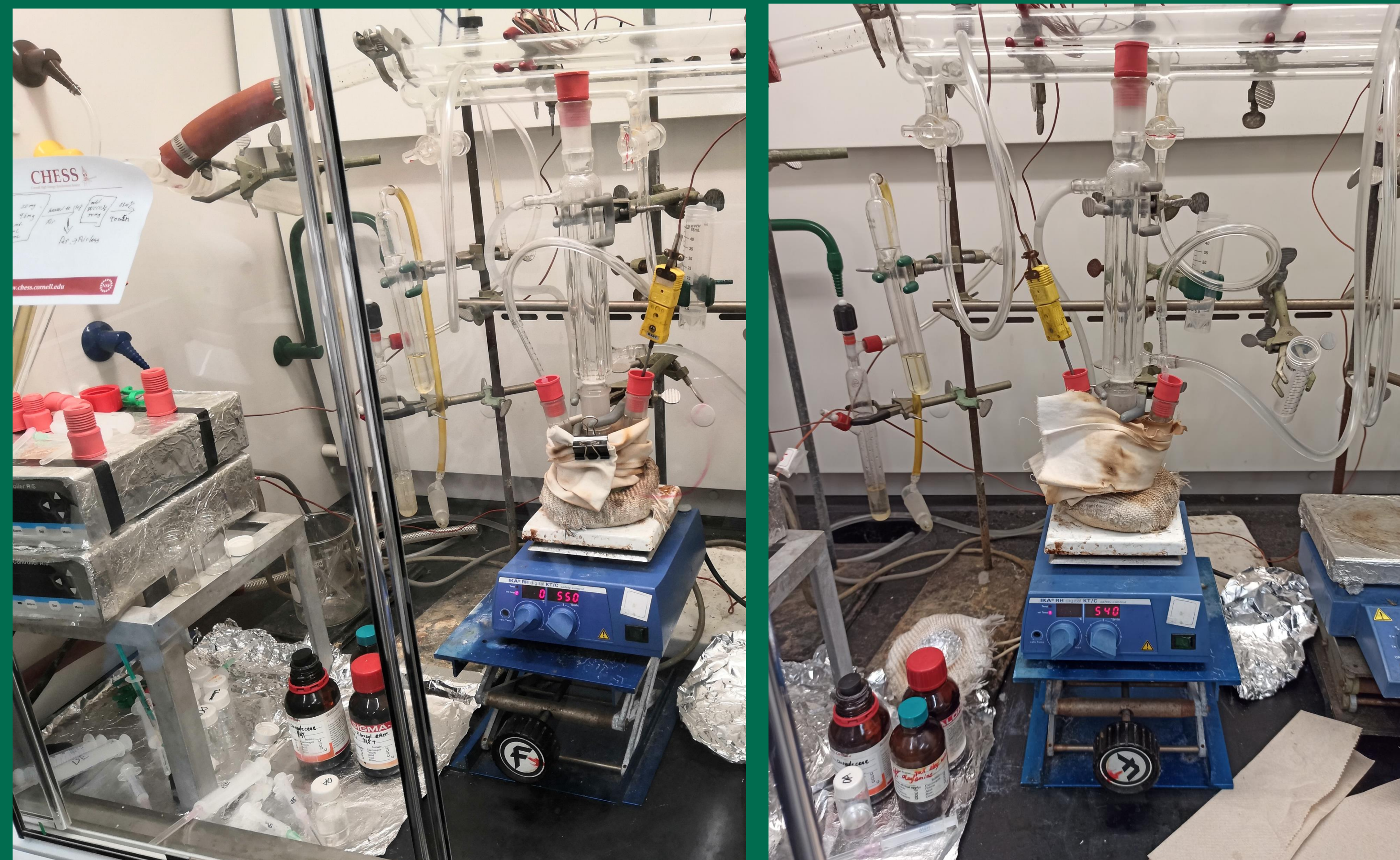
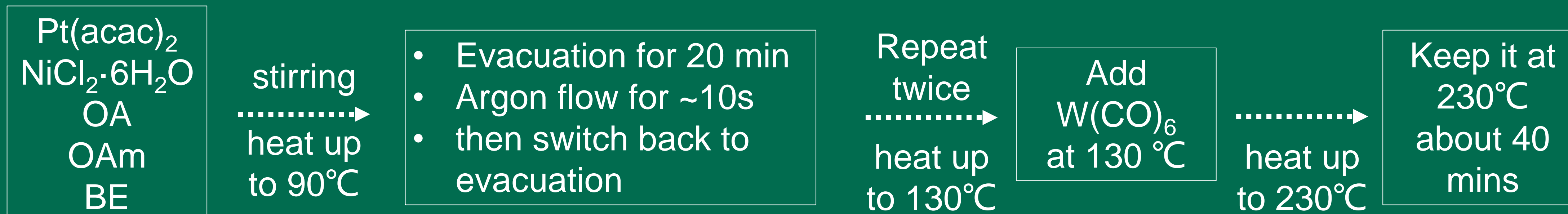
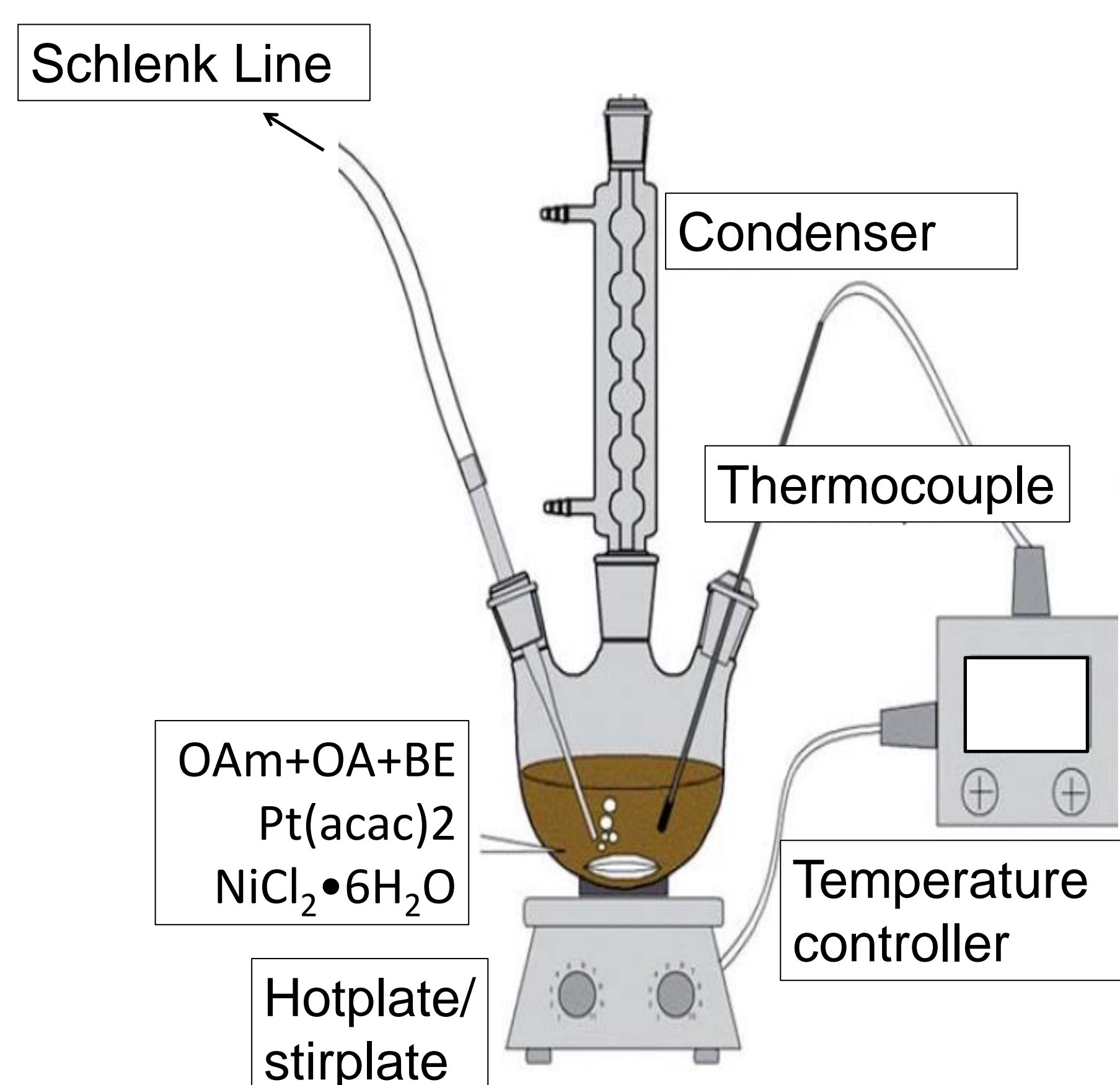
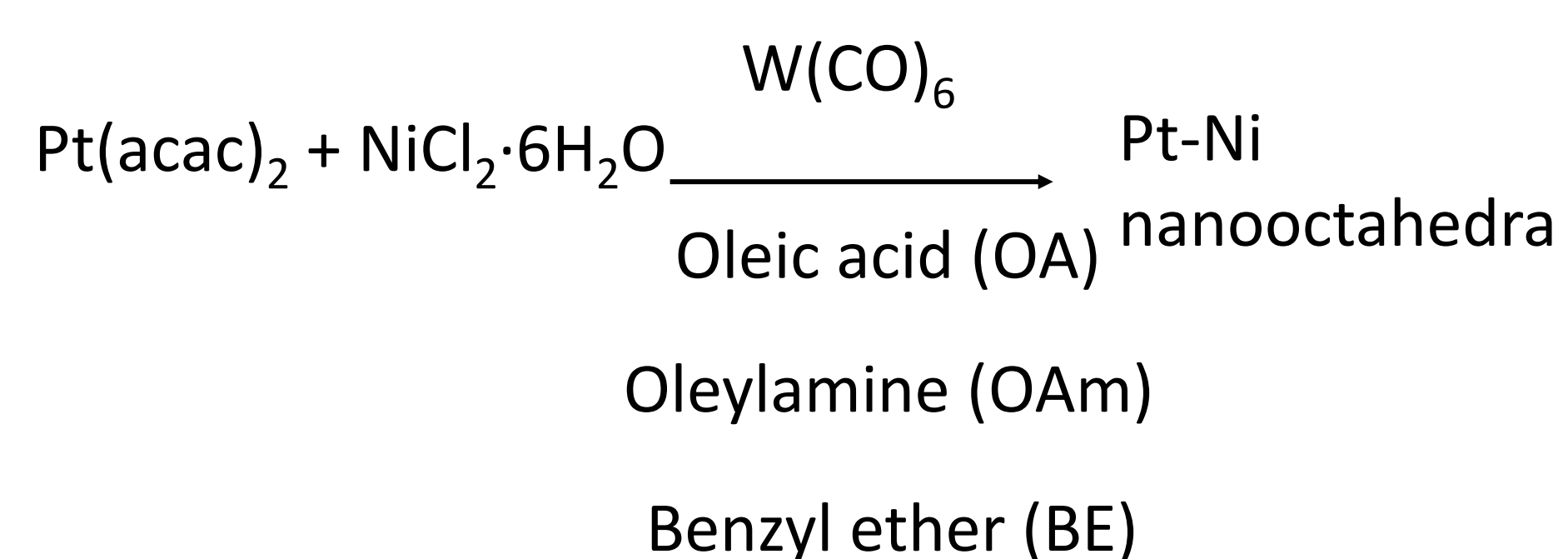
PRESENTER:
Yang Peng

BACKGROUND:

- Platinum-based alloys have been extensively shown to be effective catalysts in oxygen reduction reaction (ORR) and the Pt₃Ni (111) surfaces were demonstrated to enhance ORR catalytic activity.
- We design a wet-chemical approach to synthesize Pt₃Ni octahedral alloys of which all the surfaces can be taken as the (111) surface.

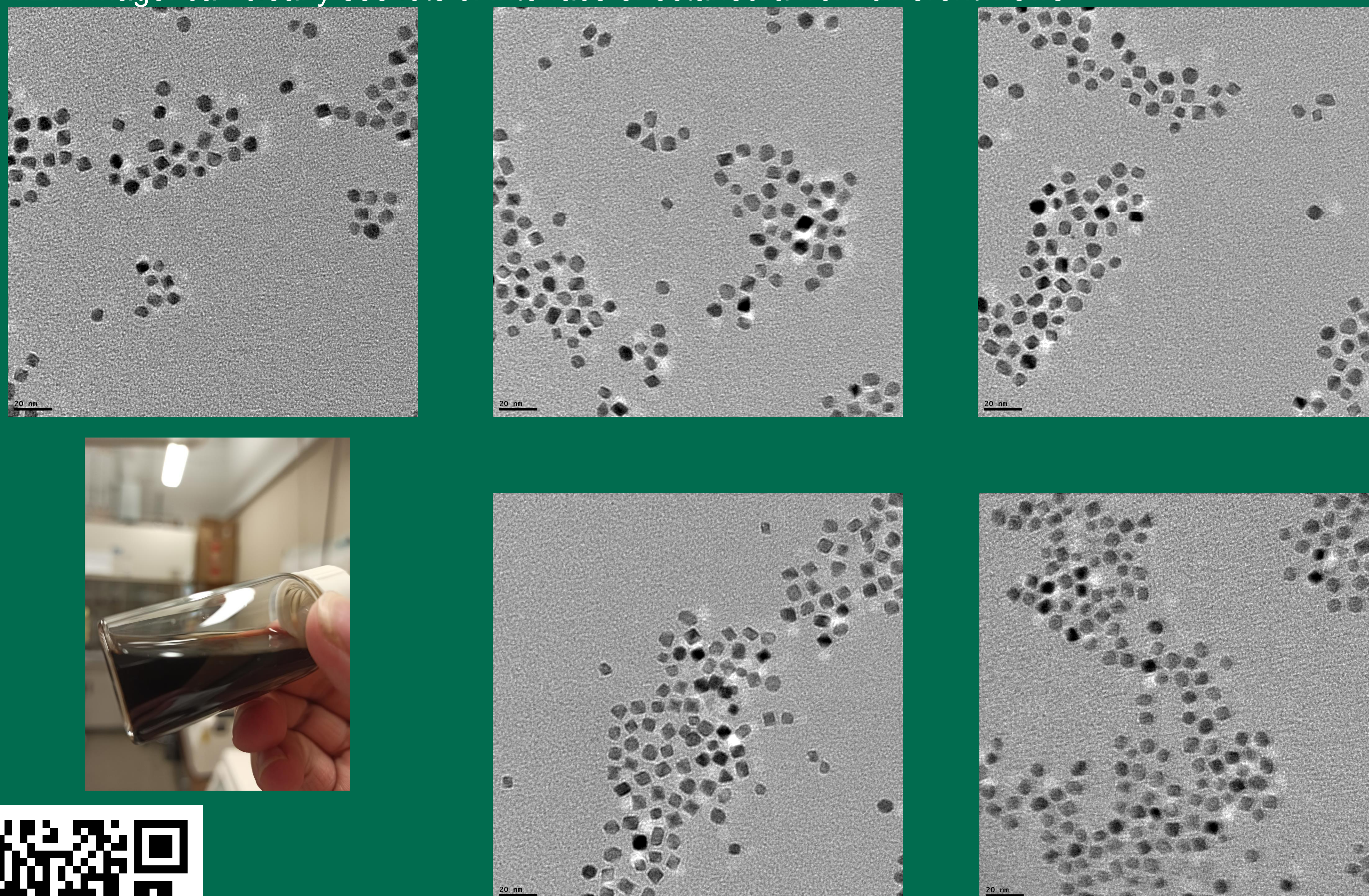


METHODS:



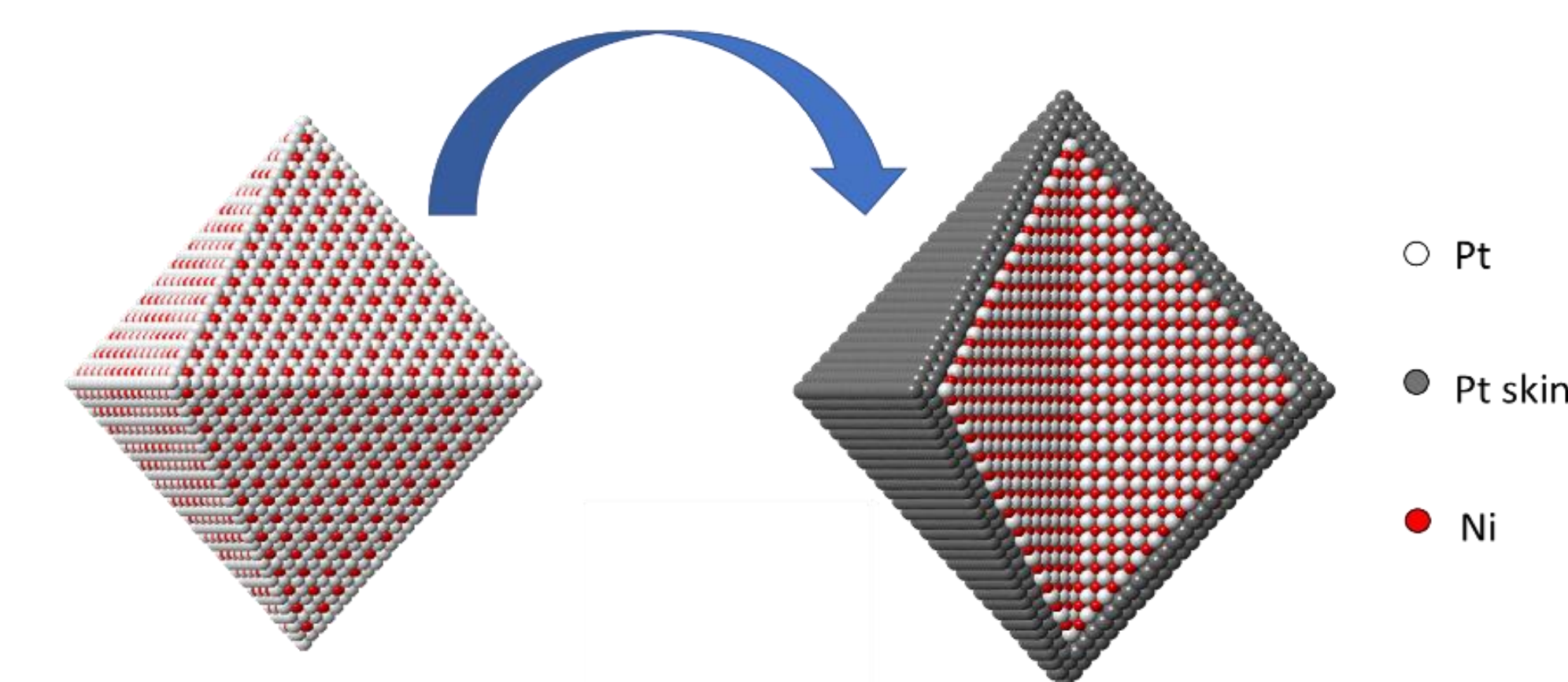
Characterization

TEM image: can clearly see lots of interface of octahedra from different views



SUMMARY

- Pt-Ni octahedra can be synthesized via wet-chemical approach.
- We expect that our work will show that this synthetic method may be extended to the preparation of more shape-controlled catalysts.
- We also expect that our work will produce an order arrange of platinum and nickel because the order of platinum and nickel atom in the alloy influences the performance of the catalyst.
- We will do some subtle surface modifications too as catalytic properties are closely associated with the active sites on the surface.



ACKNOWLEDGMENT

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- Thank Dr. Luan and Dr. Li for the assistance on TEM characterization.

REFERENCES

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- Shen, X.; Dai, S.; Zhang, S.; Lu, Z.; Zhang, C.; Graham, G. W.; Lei, Y.; Pan, X.; Peng, Z. Oxidation-Induced Atom Diffusion and Surface Restructuring in Faceted Ternary Pt-Cu-Ni Nanoparticles. *Chem. Mater.* 2019, 31 (5), 1720–1728. <https://doi.org/10.1021/acs.chemmater.8b05199>.

