Developing High Dielectric Constant Nanoinks From Group 4 Metal Alkoxide Precursors

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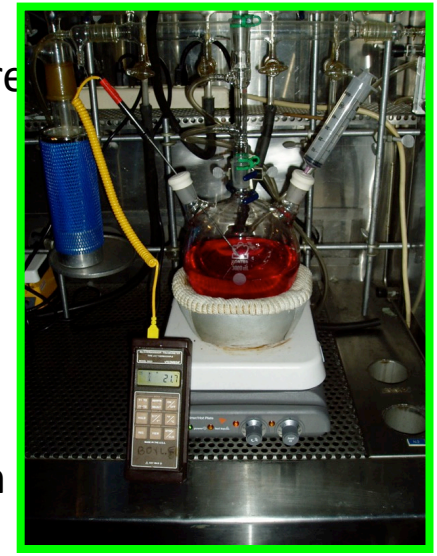
Problem:
Direct Write Robotics Laboratory needs inks containing "high quality" group 4 metal oxide nanoparticles.

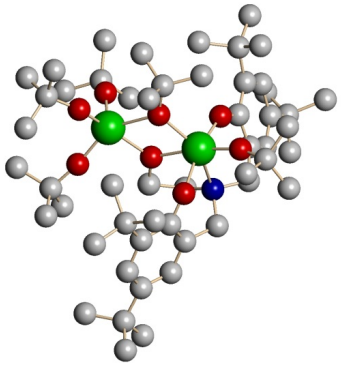
Goal:
To synthesize hafnia nanoparticles from novel precursors that were synthesized using the H_3-AM-DBP_2 tridentate ligand.

Method:

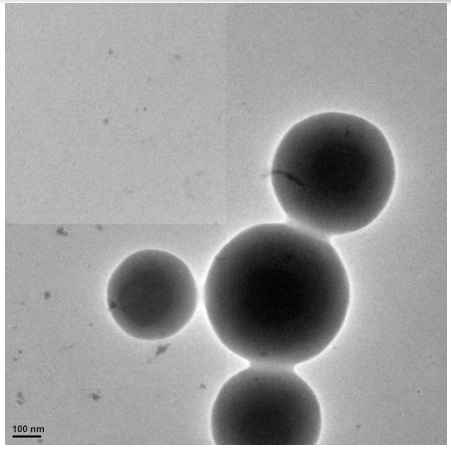
- Novel precursors were synthesized by reacting H_3-AM-DBP_2 with available precursors
- Hafnia was synthesized through solution precipitation route



Results:



Novel precursor



Hafnia nanoparticles

Future Work:

- Test different nanoparticle synthesis preparations
- Make inks containing the nanoparticles for use in Direct Write