

# Design of a Molten Salt Metal-Air Battery with High-Energy Density

04/06/2022



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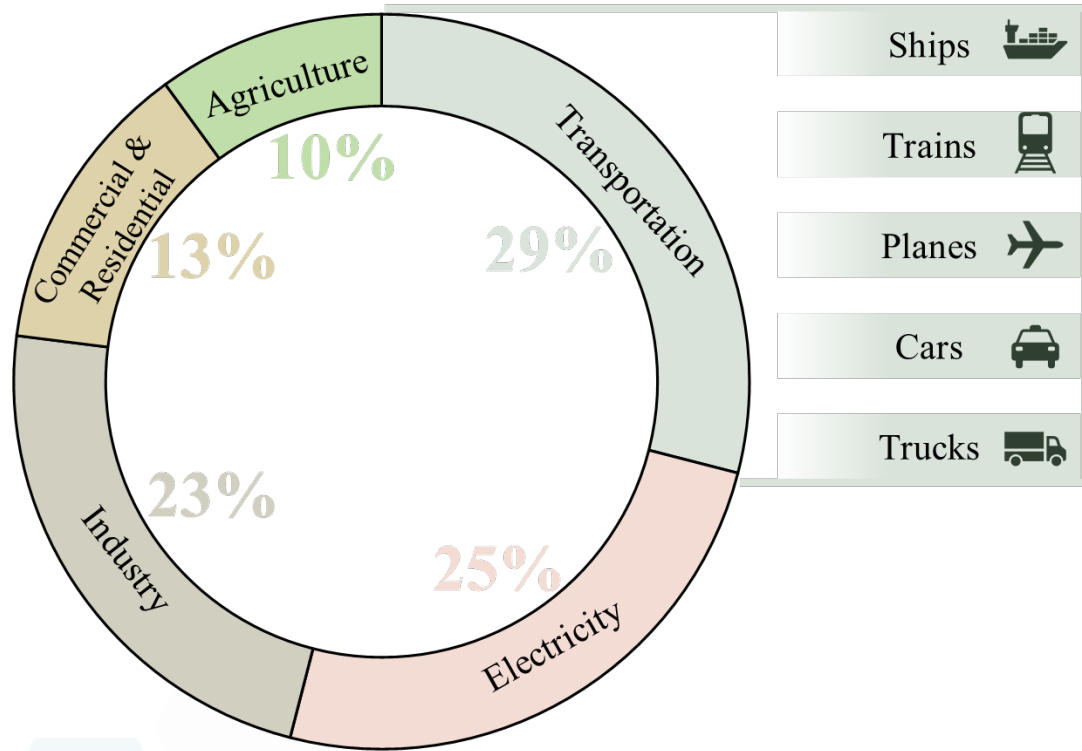
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## Energy Metals Research Group

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all

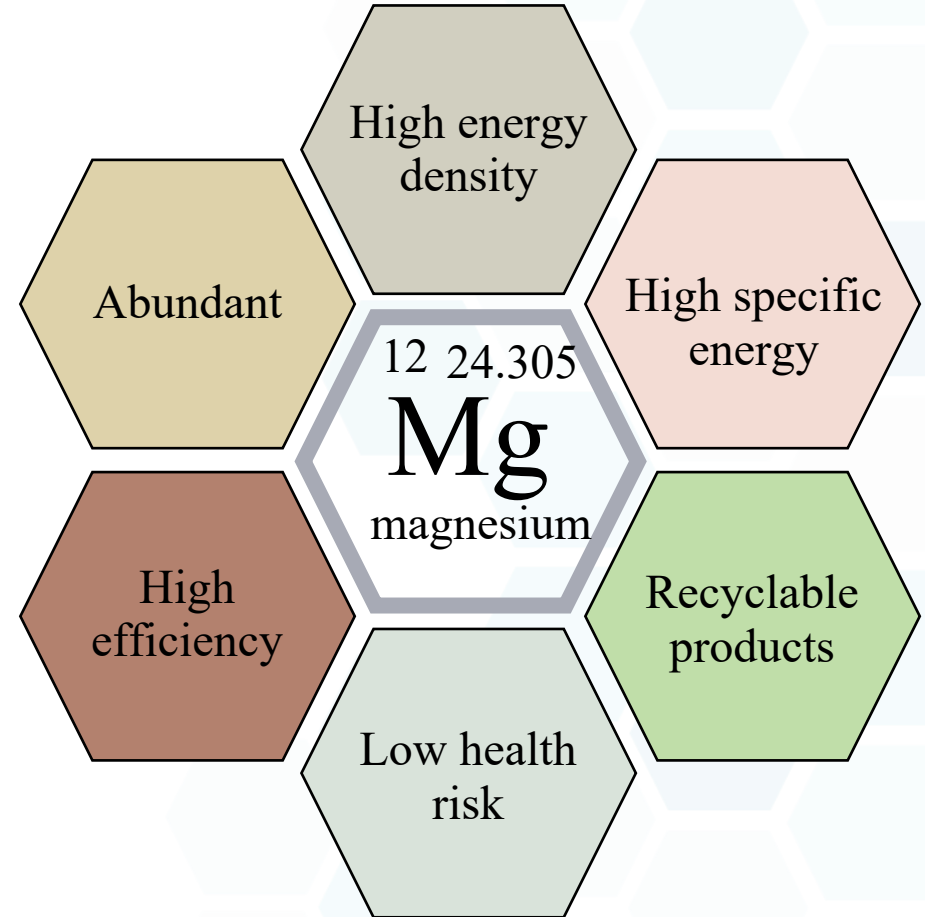


# Current CO<sub>2</sub> Emission



Greenhouse gas sources of United States emissions by economic sector

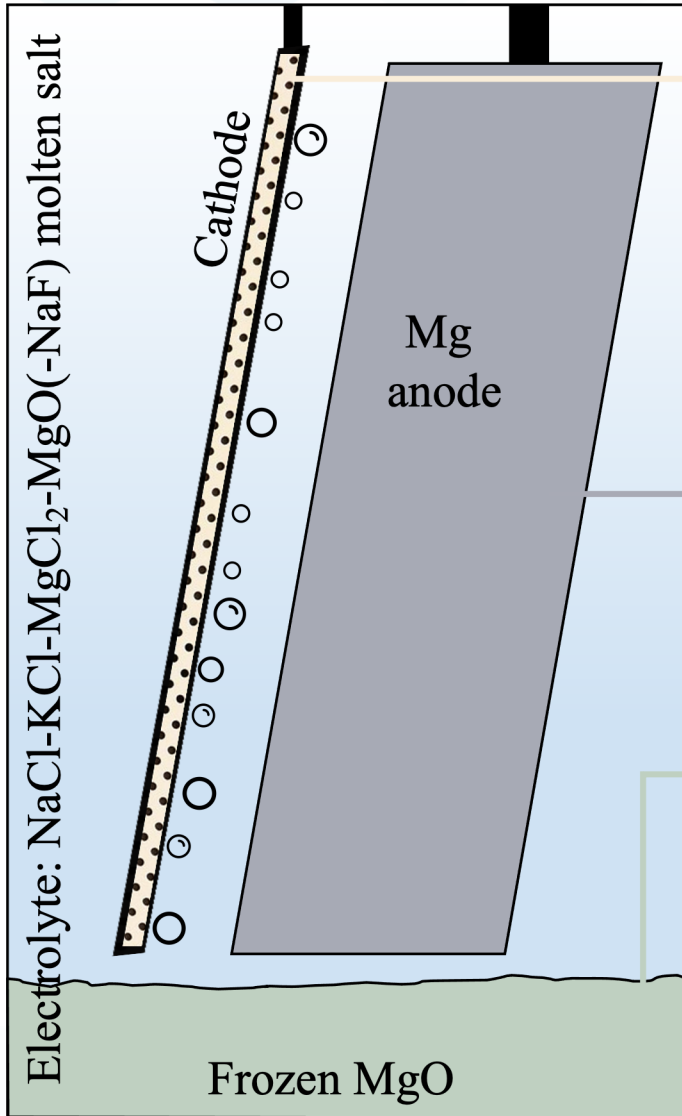
One single large ship emits as much CO<sub>2</sub> as 70,000 cars



Mg-air battery can cleanly provide the energy needed for long-haul shipping



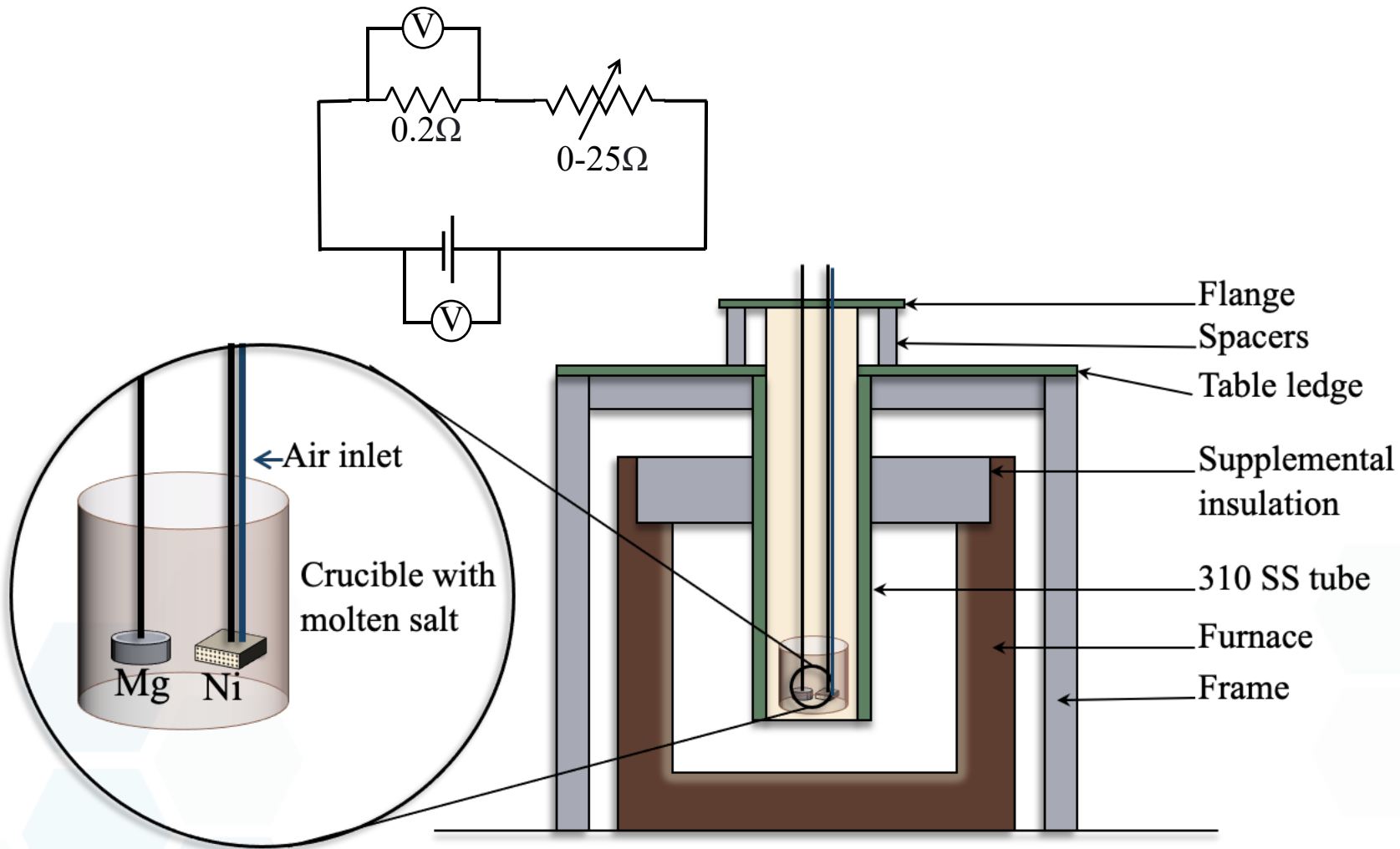
# Mg-Air Battery Design



Estimated operating temperature  
range: 420-620 °C

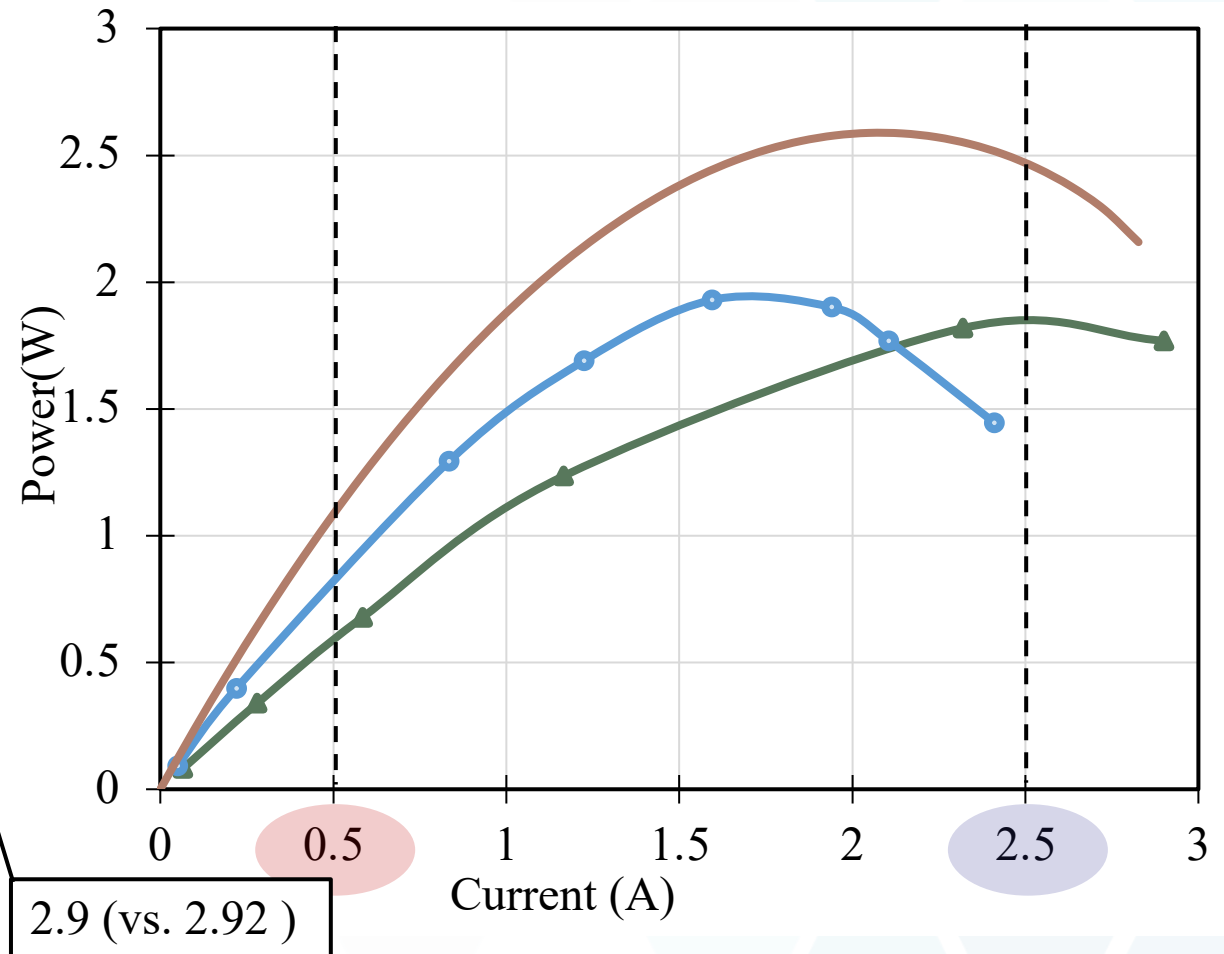
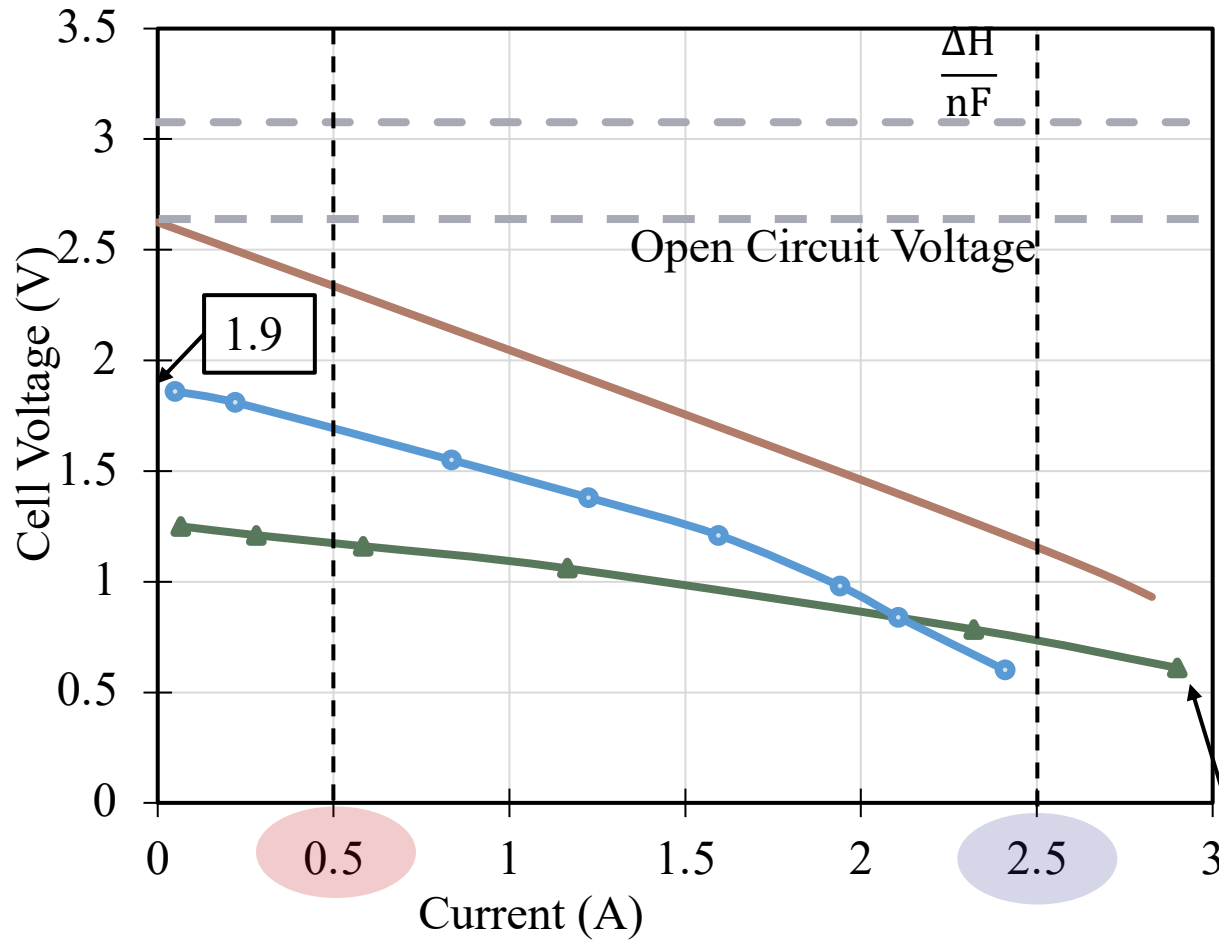
Multiple anode-cathode pairs  
create a stack in a single  
electrolyte bath

# High Temperature Experimental Setup





# Experimental Results



Theoretical voltage/power after ohmic polarization,

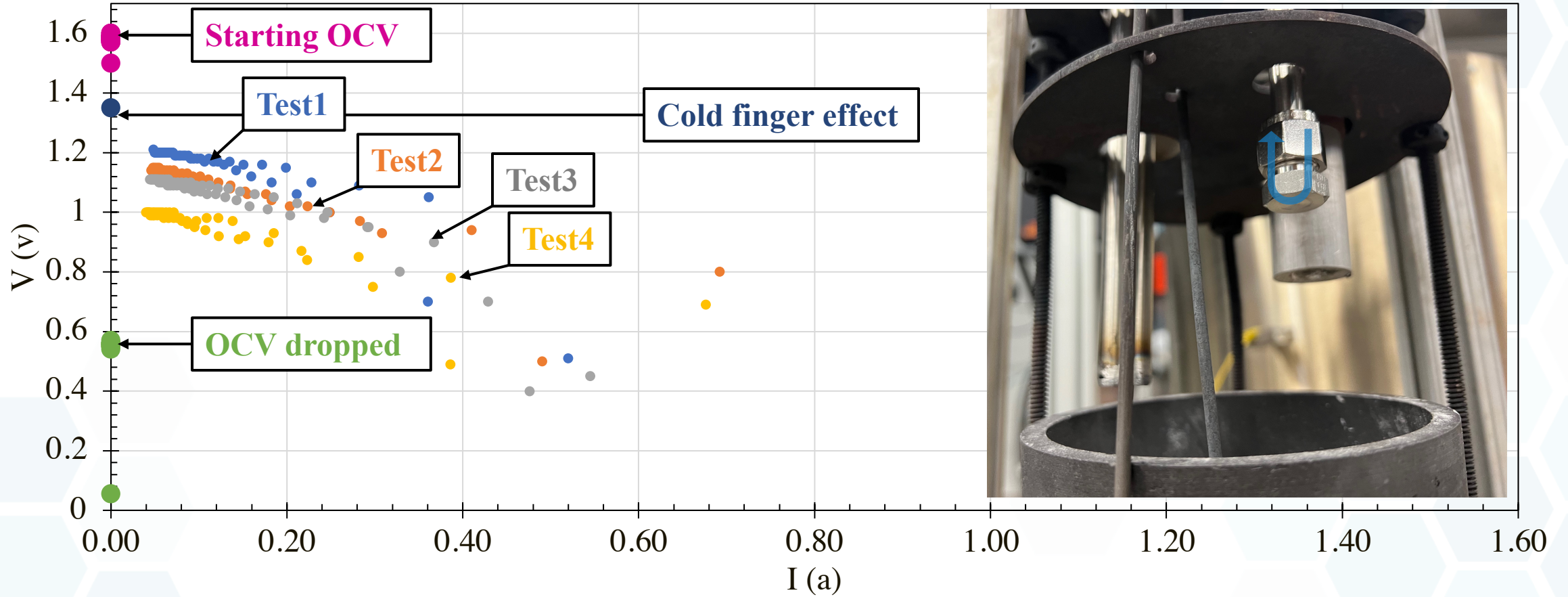
concentration polarization, lead loss and heat exchanger loss

Experiment 1 results

Experiment 2 results



# Cold finger



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A world of 100% renewable energy  
is possible, and we are able to  
transform the energy system fast  
enough to avoid the climate  
catastrophe!

Thank you for your attention

We will be happy to answer any questions

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