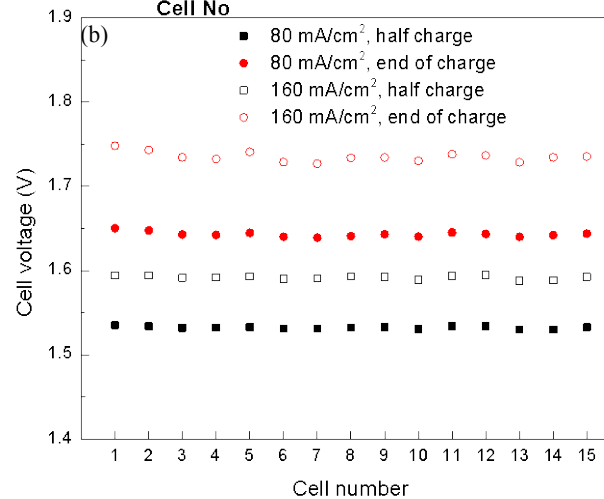
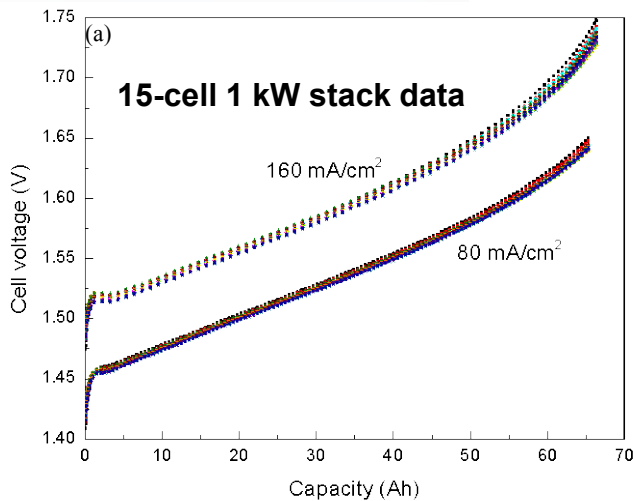
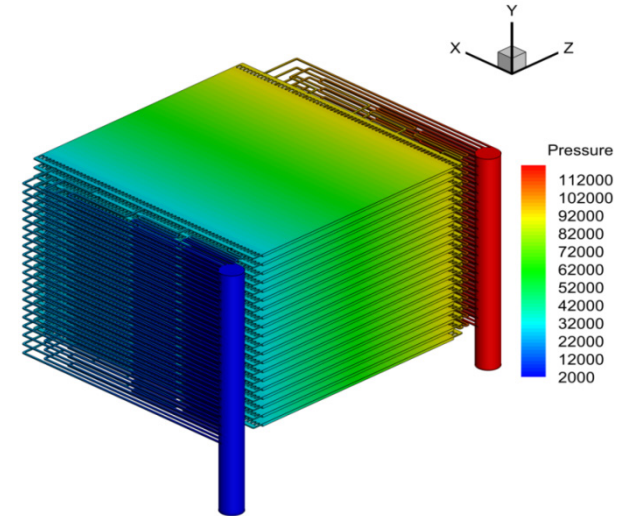
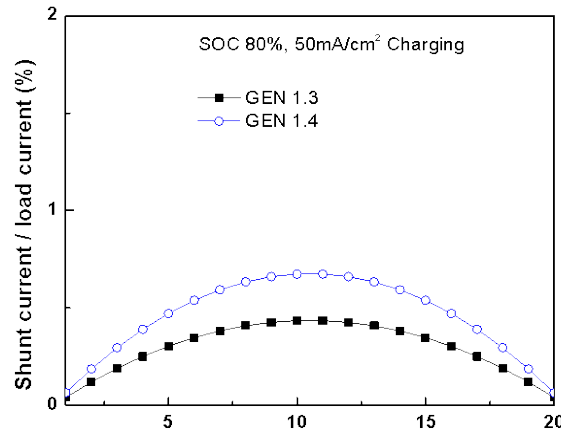
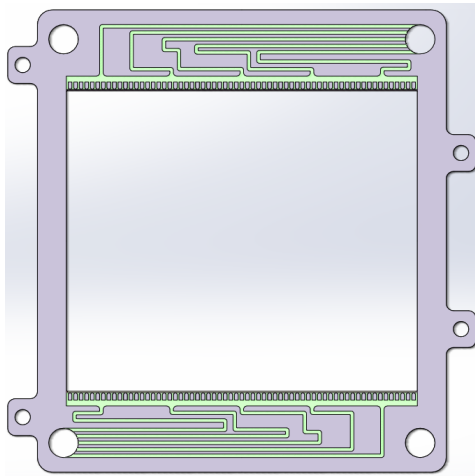


# Flow Battery Modeling

Vilayanur Viswanathan, Pacific Northwest National Laboratory, vilayanur.viswanathan@pnnl.gov



Developed shunt and flow models were used to successfully develop a kW scale prototype stack with low shunt loss and low pumping power loss