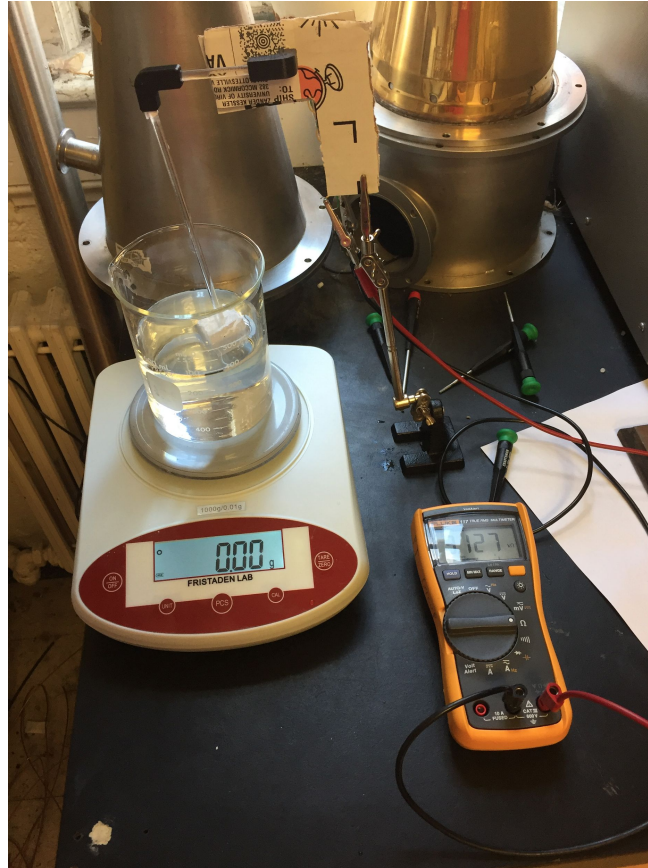


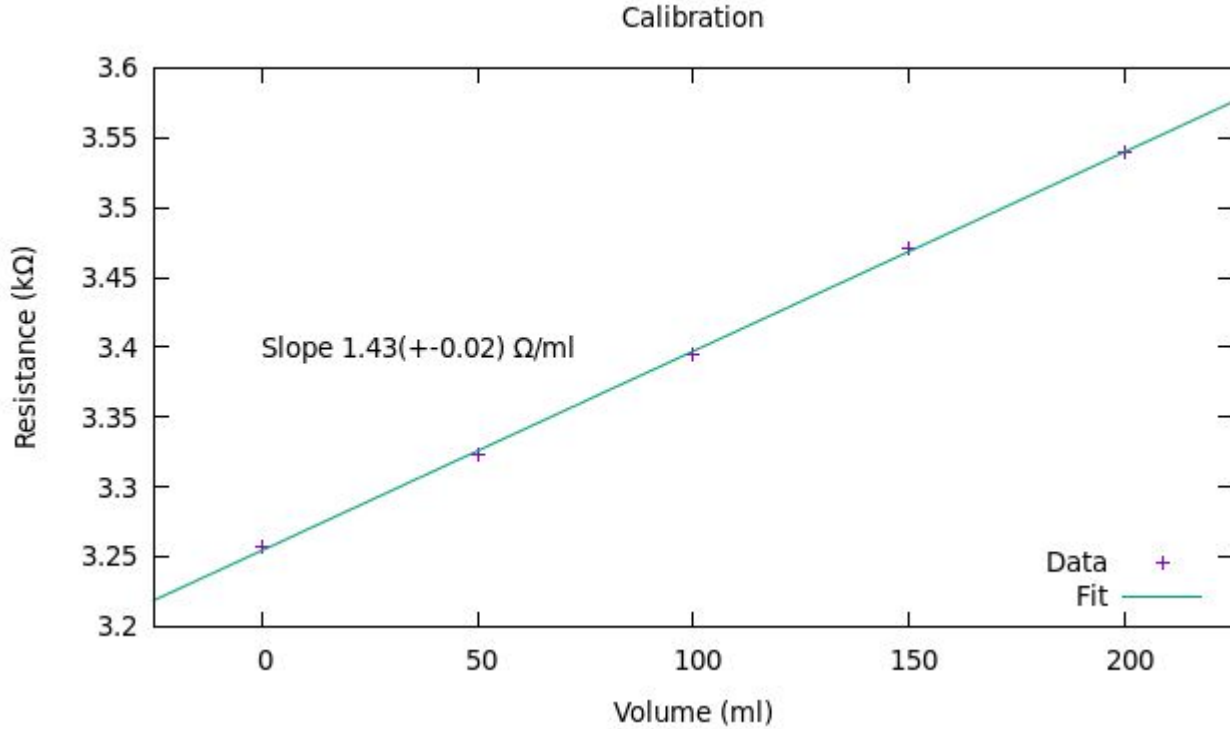
Packing Fraction Measurement

Arthur Conover

Proof of concept setup



Calibration



Inverse of slope is 0.70(+/-0.01) ml/Ohm.

First Target Cup PF Measurement

Resistance before: 3.596 kOhms

Resistance after: 3.614 kOhms

Inferred volume: 12.6 ml

Using beaker, approx volume ~30 ml

Measurement not accurate enough

Possible issues

- Relationship not actually linear
- Too much friction in pot
- Bobber not buoyant enough
- Resistance changes too small for multimeter to accurately measure
- Too few calibration points

Next steps

- Try again, being more careful and taking more calibration points
- Automate measurements (need new scale able to communicate with computer)
- Distance sensor (found one from [Baumer](#) with good accuracy, submitted an inquiry)