8/1/24 Check pipetting, pH measurements, reproducibility, stability of pH sensor

Objectives:

* Adi and Miller’s prior results using the robot pipet to mix solutions. I will check results using the handheld pipets in my lab to make sure the robot pipetting is OK.
* Repeat Adi’s measurements. Adi first pipetted several acid/cbase ratios, then measured from low r to high r, let the plate sit overnight, then measured from high r to low r. Today I compared my results with Adi’s high-r-to-low-r results. Also when Miller ran GP, he compared his GP results to Adi’s high-r-to-low-r results.
* Conduct experiment in triplicate to check reproducibility.
* Calibrate pH sensor before run. Standards in wells (3,0), (3,1). Then check calibration after run using fresh solutions in wells (3,2), (3,3).
* Check whether robot pipet tip hits bottom of cup – NO, everything is OK.
* Check how well cell\_map.txt (version on Github) works. A little off in some places.
* Check protocol written by Miller

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| --- | --- | --- |
| Ratio  (vol acid / vol base) | Vol acid (ml) | Vol cbase (ml) |
| 0.1 | 0.1818 | 1.818 |
| 1.0 | 1.000 | 1.000 |
| 12.8 | 1.8551 | .1449 |

Vtot = 2 ml = Vacid + Vbase

R = Vacid /Vbase

🡪 Vbase = 2/(1 + r) and Vacid = 2r/(1 + r)

Stock solutions: 0.1 M acetic acid; 0.1 M sodium acetate

Solutions in wells were prepared ahead of time and used within ~2 hrs.

Adi’s previous fit: pH = 4.43 – log [acid]/[cbase] = 4.43 – log Vacid / Vcbase

A paper with writing on it

Description automatically generated