

Calculating Capacity

df:

i	time-s	current-A	delta-t-s
1	0	1	10
2	10	1	10
3	20	1	10
4	30	1	-

$$\text{Capacity} : A \cdot h$$

$$Q = \int_0^T I(t) dt$$

$$Q \approx \sum_{i=1}^N I_i \cdot \Delta t$$

capacity-ah = []

for i in range(len(df['time-s'])-1):

curr-time = df['time-s'][i]

next-time = df['time-s'][i+1]

delta-time = (next-time - curr-time) / 3600

curr-current = df['current-A'][i]

capacity-ah.append(curr-current * delta-time)

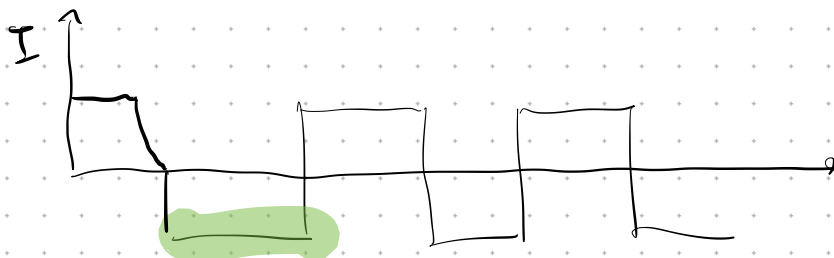
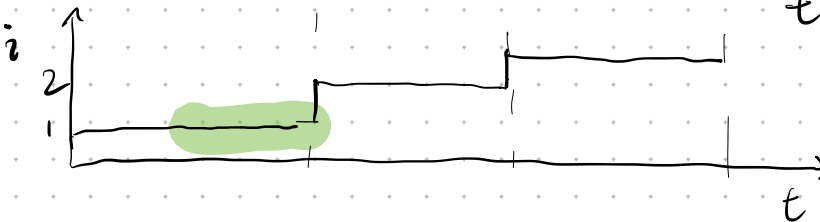
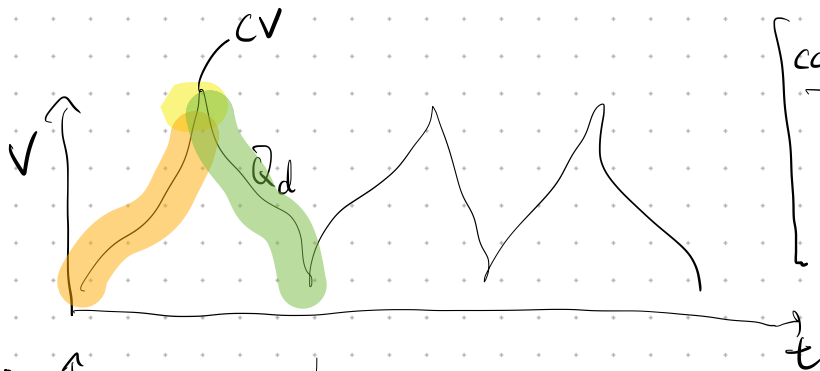
capacity-ah = np.array(capacity-ah)

SOC = capacity-ah / np.max(capacity-ah)

capacity-mahg = capacity-ah / mass-g
 ↳ standard figure of merit
 g : mass of active material

cathode → Q_d

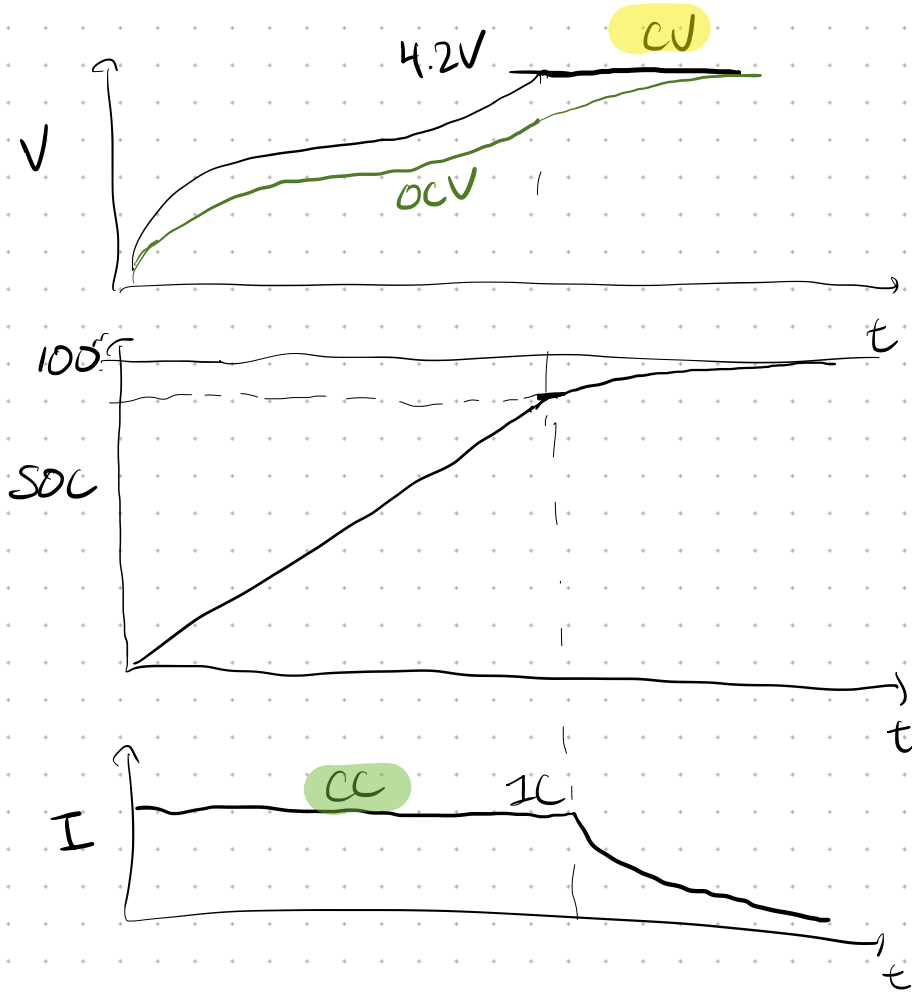
anode → Q_c



cycle index → i

step index → j

CC-CV charging



CC : constant current

CV : constant voltage