3.091 Solid State Chemistry: Week 6

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Progress Update

Over the past week I have:

1. Begun the week 6 exam.

Example Problem (Statement)

Problem: Calculate the potential energy (in Joules) of interaction between two carbon nuclei at a distance of $25.9 \cdot 10^{-12}$m.

Example Problem (Solution)

Solution: Recall Coulumb's law, which states that the force experienced by two charged particles with charges q_1 and q_2 at distance r can be written as

$$F = \frac{1}{4\pi E_0} \cdot \frac{q_1 q_2}{r^2} \tag{1}$$

Each carbon nuclei has charge $+6$eV, and thus by plugging in:

$$F = \frac{1}{4\pi E_0} \cdot \frac{72\text{eV}}{(25.9 \cdot 10^{-12}\text{m})^2} = 4004.577 \text{ Joules} \tag{2}$$