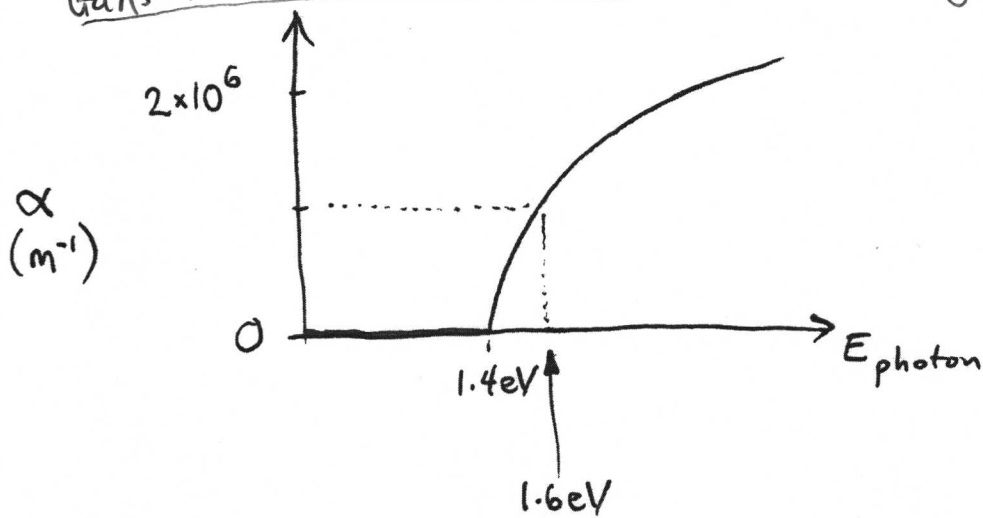


## Quiz 19

GaAs Absorption Coefficient (direct band gap,  $m_{\text{reduced}} \approx 0.06 m_e$ )



- a) How thick should the GaAs absorber layer be in a solar cell? Design the solar cell to absorb  $\approx 90\%$  of photons that have  $E_{\text{photon}} = 1.6 \text{ eV}$ .
- b) Consider another solar absorbing material with the same direct band gap ( $E_g = 1.4 \text{ eV}$ ), but  $m_{\text{reduced}} = m_e$ . How thick does this new material need to be?