

Potential energy stored in the dipole,

$$U = -\vec{p} \cdot \vec{E} = -pE \cos \theta$$

$$= -10^{-29} \times 1000 \times \cos 45^\circ = \frac{-1}{\sqrt{2}} \times 10^{-26}$$

$$= -0.707 \times 10^{-26} \text{ J} \approx -7 \times 10^{-27} \text{ J}$$