Answer on Question #67388, Physics / Solid State Physics

Iron atom has magnetic moment 2.2 miuB.Calculate it's saturation magnetisation?

Find: M_s – ?

Given:

p=2.2×9.27×10^{-24} J×T^{-1}

Solution:

Saturation magnetisation M_s is a magnetic moment p per unit volume V.

We find the magnetic moment per cubic cell (which contains 2 Fe atoms in bcc Fe metal) and divide

this moment by the cell volume to obtain the magnetization in units of emu/cm^3.

$$M_s = \frac{2 \times 2.2 \times 9.27 \times 10^{-21}}{(2.87 \times 10^{-24})^3} = 1725 \text{ emu/cm}^3$$

Answer:

$$M_s = 1725 \text{ emu/cm}^3$$