

Name: _____

Magnets in Matter Homework

1. A toroid with inner radius of 19 cm and an outer radius of 21 cm is filled with liquid oxygen. The toroid has 4000 turns and carries a current of 10 A. The liquid oxygen has a susceptibility of 4×10^{-3} .

What is the magnetization at the mean radius of the toroid?

What is the magnetic field B ?

What is the percentage increase in B produced by the liquid oxygen?

2. A long thin iron-core solenoid has 450 turns of wire per meter, and a 20-mA current flows through the wire. Under these conditions, the susceptibility of the iron is 3000. What is the magnitude of the magnetic field B inside the solenoid?