2. (35 pts) In the figure below, we are looking along the axis of a 3500-turn, 78-cm long solenoid with radius 3.8 cm. There is a 1.3 Amp current in the solenoid flowing in a clockwise direction. Inside the solenoid is a single-turn square loop, 3.4 cm on a side oriented with its plane perpendicular to the axis of the solenoid.

Assume that the current in the solenoid increases to 3.1 Amps in a time interval of 0.065 sec.

- a) What is the initial direction of the flux in the square loop?
- b) Is the flux in the square loop increasing or decreasing?
- c) In what direction is the induced magnetic field in the loop?

d) What is the magnitude and direction of the induced current in the square loop during this time interval if the coil has a resistance of 3.5 Ohms?

