



Experiment 1 - The Magnetic Liquid

Materials

- EMG-905, a mineral oil-based ferrofluid with a saturation magnetization of 400 gauss obtained from [Ferrofluidics Corporation](#).
- Strong magnet (cow magnet, bar magnet, or rare earth magnet). [Click here](#) for magnet suppliers.
- Long test tube

Caution! Caution! Caution! Caution! Caution! Caution! Caution! Caution!

The ferrofluid causes stains and is difficult to remove from skin and fabrics. Keep the fluid off the magnet. It is virtually impossible to remove ferrofluid after direct contact with a strong magnet.

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Procedure

- Transfer a small amount of ferrofluid to a long test tube or other long glass tube.
- Using a strong magnet placed outside of the tube, drag the ferrofluid up the side wall of the glass tube. This step demonstrates effectively how the position of the ferrofluid can be controlled with a magnetic field. (Upon removal of the magnet, the ferrofluid tends to coat the glass. Pretreatment of the glass tube by: 1) soaking it overnight in a strong solution of KOH in ethanol or 2) by coating the inside with Scotchgard® spray and drying will help the ferrofluid drain more rapidly. Several minutes may be required for the ferrofluid to drain sufficiently so that the demonstration may be viewed again in the same tube.)



Figure 1 - Pulling ferrofluid up a tube with a strong magnet.

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