1.1: Background Material

Text References

- electric charge and force
- dipoles
- conductors

Producing Static Charge

For this lab, you will need a means for producing large amounts of static charge. All of the most effective methods with common household items consist of cloth-rubbing insulating materials such as plastic, acrylic, rubber, and latex. Various materials can also be used as the rubbing cloth, including natural fibers like wool or cotton, as well as synthetic materials like polyester and nylon, or blends between both. Different rubbing materials may work better with certain insulating materials, and you may want to experiment to determine what works best.

Removing Static Charge

In order to keep controls on your experiments, you may wish to *remove* charge from something you have already charged. There are a couple of useful methods for this. The first involves humidity. It turns out that water molecules in the air are quite effective at picking up static charge off surfaces, and carrying them away. This explains why, in colder northern climates, static discharges, like shocks to fingers when touching doorknobs, are more common in the winter, when the humidity is significantly lower. If you are doing this lab in a humid climate, you may find it challenging to keep an object charged for any significant period of time. Anyway, this does provide a means for removing charge – *breathing hot breath* on the object a few times often does the trick. Touching the object on a grounded metal like a water faucet can also help, though since the object is an insulator, you will want to make contact with as many places on the rod as possible, as the charge will not flow across the insulator to a single point of contact.