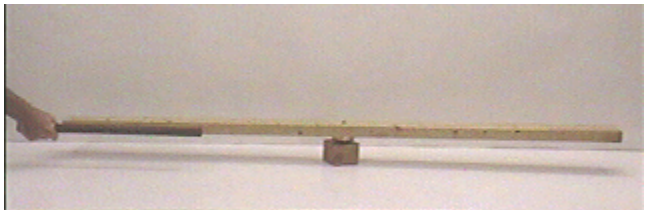
Answer #131

The answer is (a): the positive glass rod will attract the wooden 2"x4" in the same way that the negative rod did, as seen in an mpeg video by clicking your mouse on the photograph below.



These experiments work by making use of the *dipole* nature of the water molecule: water is a covalent molecule that is not symmetric, so the "centroid" of the positive charge is displaced from that of the negative charge. When exposed to a *non-uniform* electric field the water molecules in the wood will rotate so that they are aligned with the field and experience a net force in the direction of the source, the charged rod.

This is the same phenomenon that is used in a microwave oven: the oscillation of the microwave field flips the water molecule back and forth and thereby converts the microwave energy into mechanical vibration of the water molecules or *heat*.

Question of the week Main Page

Archive 7

Question of the Week

Outreach Index Page

Lecture-Demonstration Home Page

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