Electric Charges and Fields

Activity 1

Read the following examples and answer the questions given at the end.

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Soft contact lenses are comfortable to wear because they attract the proteins in the wearer's tears, incorporating the complex molecules right into the lenses.

They become, in a sense, part of the wearer. Some types of makeup exploit this same attractive force to adhere to the skin. What is the nature of this force?

Taken from *Fundamental of Physics* By *Resnik , Walker and Halliday*

Some railway companies are planning to coat the windows of their commuter trains with a very thin layer of metal. (The coating is so thin you can see through it.) They are doing this in response to rider complaints about other passengers' talking loudly on cellular telephones. How can a metallic coating that is only a few hundred nanometers thick overcome this problem?

Taken from *Fundamental of Physics* By *Resnik , Walker and Halliday*

How do conditioners act?

- Conditioner molecules contain cationic surfactant which gives a positive electric charge to the conditioner. The negative charge of the hair is attracted to the positively charged conditioner molecules, which results in conditioner getting deposited on the hair, especially on areas where there is degree of weathering. This is true for damaged hair as they are even more negatively charged. Thus, conditioners reduce the static electricity. They also flatten the cuticle scales over the hair shaft, reducing the friction between hair fibers, increasing the reflectance of light which improves shine and color. The smooth feel resulting from conditioner use gives easier combing and detangling in both wet and dry conditions. Conditioners temporarily seal split ends and mend trichoptilosis.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4458934/

- Read the above examples and Explore the nature to find more such examples and write and explain thoroughly at least three of them in which concepts of Electric Charges and fields are used.