Following Charge Through a Model Gel

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A display model uses a wet gel between two contacts. The gel contains a blue marker attached to positive ions and a yellow marker attached to negative ions. The gel stays in place during the test. The colored markers can move through it.

Trial	Left contact	Right contact	Blue marker moves	Yellow marker moves
1	Negative	Positive	Left	Right
2	Positive	Negative	Right	Left

1 Which statement explains both trials?

(1) Both markers follow the positive contact.

(2) The blue marker follows the positive contact.

(3) Each marker moves toward the contact with the opposite charge.

(4) The same contact attracts the blue marker in both trials.

2 Explain how the reversed movement provides evidence that the markers are moving because of charge instead of being carried by motion of the gel. [1]

Answer and work

In a second model, both ions are held in fixed positions in a dry solid. In a third model, the contacts touch a copper strip instead.

3 Explain why copper can carry a current as a solid even though the dry solid in the model cannot. [1]

Answer and work

4 The model now anchors only the negative ions to the gel. The positive ions remain free to move through it. After the contacts reverse, which marker can still move? Explain whether moving ions can still carry charge. [1]

Answer and work