

charges, electric and magnetic, I called such particles "dyons." On this view, fractional electric charge cannot exist without an accompanying large value of magnetic charge. Energetic particles of this type will ionize very strongly, until they have been slowed to a small fraction of the speed of light.

I wish to draw attention to this theoretically sound possibility, and to suggest on these grounds, rather than merely general skepticism, that occasional lightly ionizing tracks must have a prosaic explanation.

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Electrodes

Ryan's letter "Unreliable results" (29 Aug.) does not tell the whole story. An accurate pH measurement of tris buffer can be made with Beckman electrodes. Excellent results have been obtained utilizing our No. 39511 combination electrode with ceramic junction. Measurements have been made in tris buffers adjusted to pH 7, pH 8, and pH 9. An equilibration time of at least 2 minutes is required. Rinsing the electrode between measurements with 0.1M NH_4NO_3 speeds equilibration. A full report on measuring the pH of tris buffers will soon be published by our applications research department.

Tris buffer, a primary aliphatic amine of considerable reactivity, is a difficult sample. It has a temperature coefficient 10 times as large as pH 7 phosphate buffer and abnormally high junction potentials have been reported in the literature. Some Beckman combination electrodes containing linen fiber junctions (39012, 39013, 39142, 39182, and 39183) should not be used in tris buffer. Large liquid junction potential, drift, and long equilibration times in tris buffer have been observed with these electrodes. We are now aware of this situation and have taken positive steps to alert users.

Beckman manufactures a variety of pH meters and electrodes so that our customers can obtain optimum results with all types of samples. We also provide technical information and assistance to help the user make the proper choice.

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