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NASA TECH BRIEF

New Electrolyte May Increase Life of Polarographic Oxygen Sensors

The problem:

To provide an electrolyte that would not degrade the sensors (electrodes) in a polarograph used for measuring the partial pressure of oxygen in a gas mixture. Conventional electrolytes consisting of aqueous potassium chloride dehydrate at a relatively high rate, with consequent degradation of the sensors.

The solution:

Use an electrolyte consisting of a solution of the following components in percent by weight: lithium chloride, 25; dimethyl acetamide (or dimethyl formamide), 5; and water, 70. This electrolyte has a relatively low vapor pressure at ordinary temperatures and either absorbs moisture from the atmosphere or dehydrates at a very low rate, depending on the relative humidity. The second solvent (dimethyl acetamide or dimethyl formamide) decreases the surface tension of the electrolyte and thereby promotes complete wetting of the electrodes.

Notes:

1. The electrolyte may be thickened or gelled with commercially available gelling agents.
2. This development is in the conceptual stage only, and as of the date of publication of this Tech Brief, neither a model nor prototype has been constructed.

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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Category 03