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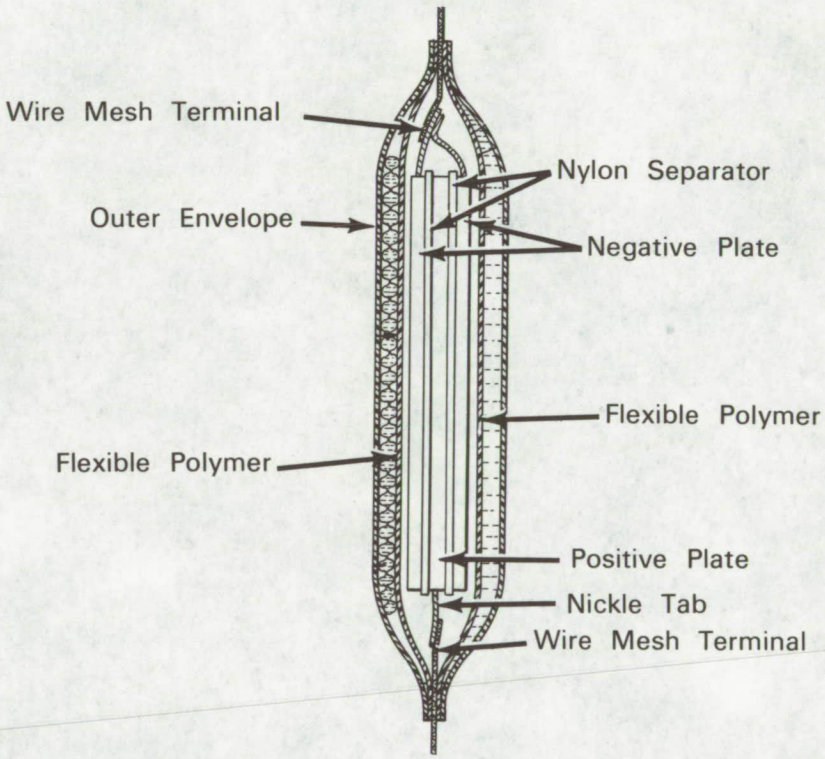
NASA TECH BRIEF

Frangible Electrochemical Cell and Sealing Technique



An electrochemical cell assembly has been constructed that is both flexible and compact and frangible under severe shock conditions. Leak-tight integrity of the housing is maintained by polymer-to-polymer fusion bonds through holes in the expanded metal electrode terminals.

The cell includes a positive electrode plate between two negative electrode plates. The plates are of nickel powder plaques sintered to both sides of flexible metal grids which provide mechanical support for the plaques plus acting as current collectors. Pasted, electrodeposited or pressed powder plates could also be used for increased frangibility. The positive plate is impregnated with a nickel oxide active substance and the negative electrodes are impregnated with a cadmium active substance. The electrodes have wire mesh terminals attached to nickel tabs at the plate ends and are separated by non-woven nylon which is wetted by the electrolyte. Electrodes and separators are held in intimate electrical contact by nonconducting threads.

A thin-wall envelope of low water vapor and oxygen permeability is formed from two sheets of flexible polymeric material joined at their margins by bonding or adhesives to form a leak-tight seal around

(continued overleaf)

the electrodes and separators. An additional or outer envelope may be formed from two more sheets of flexible polymeric material in such a way that water or some like high heat capacity fluid may surround the inner thin-wall housing to provide a thermal ballast for the cell.

Notes:

1. No further documentation for the invention is available.
2. Technical questions may be directed to:
   Technology Utilization Officer
   Goddard Space Flight Center
   Greenbelt, Maryland 20771
   Reference: B69-10056

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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