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NASA TECH BRIEF



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Improved Ultraviolet Resonance Lamp

The problem:

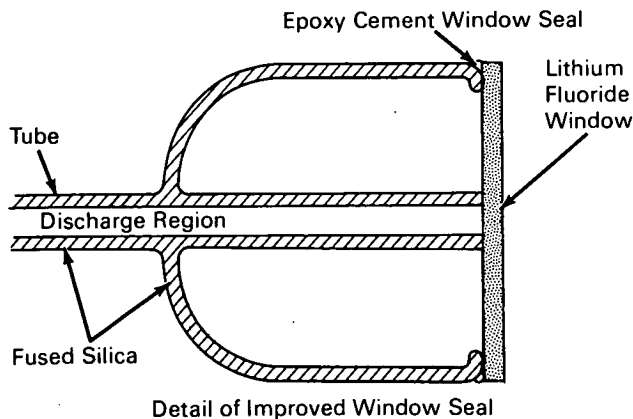
To eliminate the gradual deterioration of lithium fluoride window surfaces from condensation of products formed by interaction of a resonant rare-gas discharge with window sealing material.

The solution:

A special design of the resonance discharge tube end which removes the seal area from the path of the lamp discharge.

How it's done:

The discharge tube is attached with a ring-seal to a tube of larger diameter. The ends of both tubes are cut so that they are coplanar, and the lithium fluoride



window is then sealed to the periphery of the outer tube by an epoxy cement or with any other suitable material. In operation, the discharge is confined to

the inner tube (even at the 100% power level of a 125-watt 2450 MHz microwave generator) and the sealing material is subjected only to a vanishingly small amount of the discharge energy. Any products of decomposition resulting from the interaction of the resonant discharge with the sealing material are deposited on the unused portions of the window or in the end-bell chamber.

Notes:

1. The space between the tubes can be evacuated readily during the lamp-filling procedure.
2. Additional information is contained in the following: Bass, A.M.: An Improved Design for Vacuum Ultraviolet Resonance Lamps, Applied Optics, vol. 5, 1967 (1966).
3. Requests for further information may be directed to:

Technology Utilization Officer
Ames Research Center
Moffett Field, California 94035
Reference: TSP70-10237

Patent status:

This invention has been patented by NASA (U.S. Patent No. 3,493,805) and royalty-free license rights will be granted for its commercial development. Inquiries about obtaining a license should be addressed to NASA, Code GP, Washington, D.C. 20546.

Source: A.M. Bass of
National Bureau of Standards
under contract to
Ames Research Center
(ARC-10030)

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