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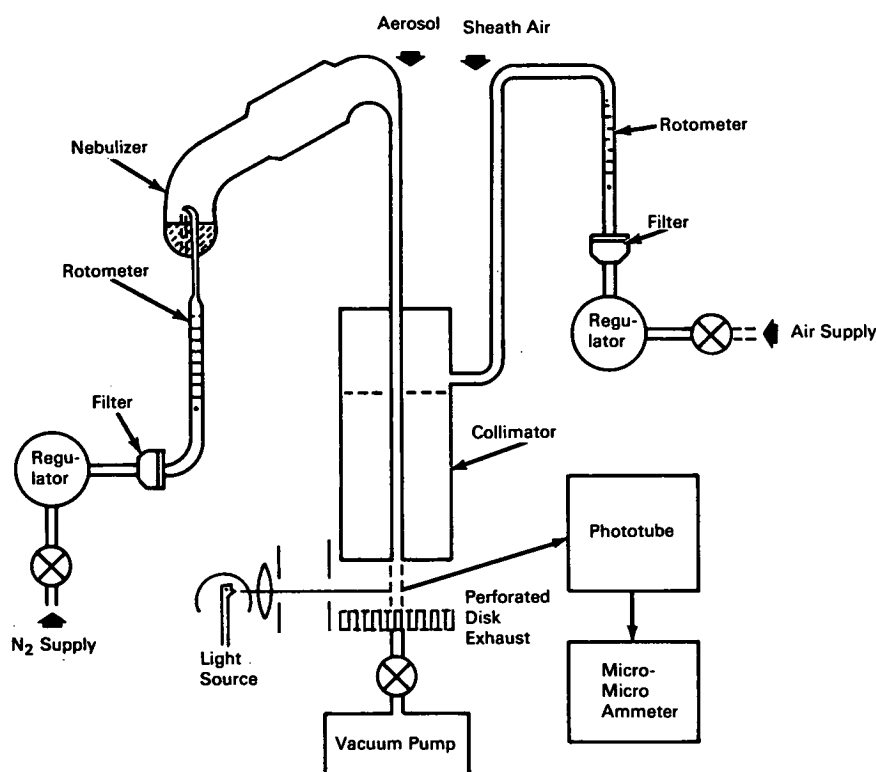
Brief 66-10320

NASA TECH BRIEF



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Solvent Residue Content Measured by Light Scattering Technique



The problem:

In cleaning large vessels, volatile organic solvents will leave traces of nonvolatile residue (NVR) that can cause system problems if above a certain concentration. Measurement of NVR in trichloroethylene, a typical solvent for cleaning large vessels, has previously been by the tedious and time consuming gravimetric method.

The solution:

A system that converts the NVR-bearing solvent to a fine aerosol and passes the aerosol between an optically focused light beam and a photodetector that is connected to standard amplifying and readout equipment.

How it's done:

The solvent containing the NVR is filtered to re-

(continued overleaf)

move all insoluble particles that would interfere with the analysis. The filtered solvent is then nebulized to a fine spray that is warmed slightly to evaporate most of the volatile solvent and leave a residual aerosol of the NVR. This residual aerosol is passed through a collimator that provides a clean, particulate-free air sheath around the aerosol filament as the filament passes through a light beam that is focused on a light-scattering photometer. The photometer produces an electrical signal that is directly related to the concentration of NVR in the solvent.

Notes:

1. A calibration curve for this nebulizer-light scattering photometer system was obtained by nebulizing standard volatile solutions containing known amounts of NVR as determined by the gravimetric method.

2. This system provides numerical cleanliness data on fluid tanking and distribution systems.
3. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
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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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