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Brief 66-10017

NASA TECH BRIEF

PTFE-Aluminum Films Serve As Neutral Density Filters

The problem:

To provide a series of neutral density filters in the wavelength range 0.3 to 2.1 microns (ultraviolet–near infrared).

The solution:

Polytetrafluoroethylene (PTFE) films coated with films of aluminum. These relatively inexpensive broadband attenuators act as neutral density filters in the required wavelength region.

How it's done:

The filters consist of a 1-mil-thick PTFE film coated with different thicknesses of vapor-deposited aluminum. Uncoated PTFE gives an optical density of approximately 0.03 at a wavelength of 1 micron, while a 1-mil-thick PTFE film coated with approximately 1.1×10^{-2} micron of vapor-deposited aluminum gives a density of approximately 1.30 at the same wavelength. The density can be varied between 1.30 and 0.03 simply by varying the aluminum thickness within the range 0.0 to 1.1×10^{-2} micron.

Notes:

1. These filters may be applied in the calibration of photometric systems.
2. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Langley Research Center
   Langley Station
   Hampton, Virginia, 23365
   Reference: B66-10017

Patent status:

No patent action is contemplated by NASA.

Source: Harold D. Burks
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Category 02