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NASA TECH BRIEF



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Fluorescent Particles Enable Visualization of Gas Flow

A simple method has been devised to provide a visual representation of the flow patterns of gases at velocities that are too slow for characterization by Schlieren photography. To apply this method, a transparent section is first coupled into the gas line where the flow is to be observed. The gas stream is then infused with a commercially available, finely divided material that fluoresces under ultraviolet light (2537 Angstroms). The ultraviolet light is directed into one side of the transparent section and a camera with high-speed black and white film is set up to view the visible light emitted by the fluorescent particles carried by the gas stream. The observations are made in a darkened area (ambient lighting extinguished). Additionally, an ultraviolet blocking filter is used on the camera lens to eliminate any background reflections so as to ensure that the photographic image is due only to the fluorescent particles in the gas stream. Fine definition of the particle tracks (gas flow patterns) are obtained at slow (0.2- to 0.5-second) camera shutter speeds.

Notes:

1. This method is a refinement of the photographic method of gas flow visualization using opaque-particle tracers in conjunction with a continuous front light source and a strobe light, as described in Tech Brief 66-10668.
2. Details may be obtained from:
Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B68-10259

Patent status:

No patent action is contemplated by NASA.

Source: A. J. Wilson
of North American Rockwell Corporation
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Category 02