

# NASA TECH BRIEF

## *Goddard Space Flight Center*

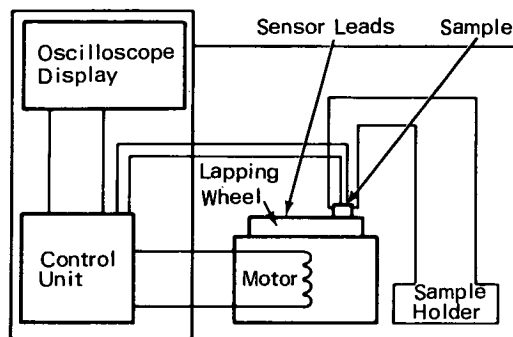


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### Automatic Cross-Sectioning and Monitoring System Locates Defects in Electronic Devices

#### The problem:

To devise a means of precisely locating fabrication defects such as shorts or resistive anomalies



in integrated circuits. The data could be used in failure analyses to prevent future occurrences of this nature.

#### The solution:

An automatic cross-sectioning and monitoring system (see fig.) consisting of a motorized grinding and lapping apparatus, a sample holder, and an electronic control circuit. A monitor displays an output signal when the exact position of the circuit defect has been located.

#### How it's done:

The device to be cross-sectioned is placed on a sample holder, and a small input voltage is applied

to the defective circuit. An external control circuit, containing a tunnel diode which senses a change in the applied signal voltage, is coupled to the defective circuit. The device is then cross-sectioned with the grinding and lapping apparatus. When the grinding operation has reached the site of the flaw, a change in the input voltage occurs and is sensed by the tunnel diode in the control circuit. The diode signal is monitored and amplified to activate a relay which stops the grinding motor action. The device is examined with a low power microscope to pinpoint the exact location of the defect.

#### Note:

No additional documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer  
Goddard Space Flight Center  
Greenbelt, Maryland 20771  
Reference: B71-10221

#### Patent status:

No patent action is contemplated by NASA.

Source: G. Jacobs and B. Slaughter of  
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