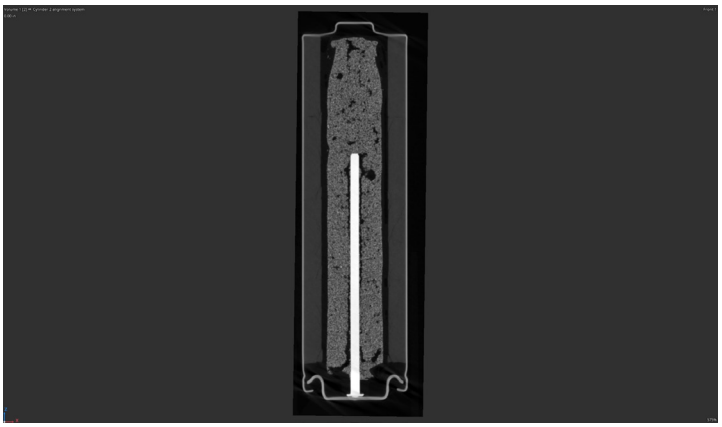
National Aeronautics and
Space Administration

Marshall Space Flight Center

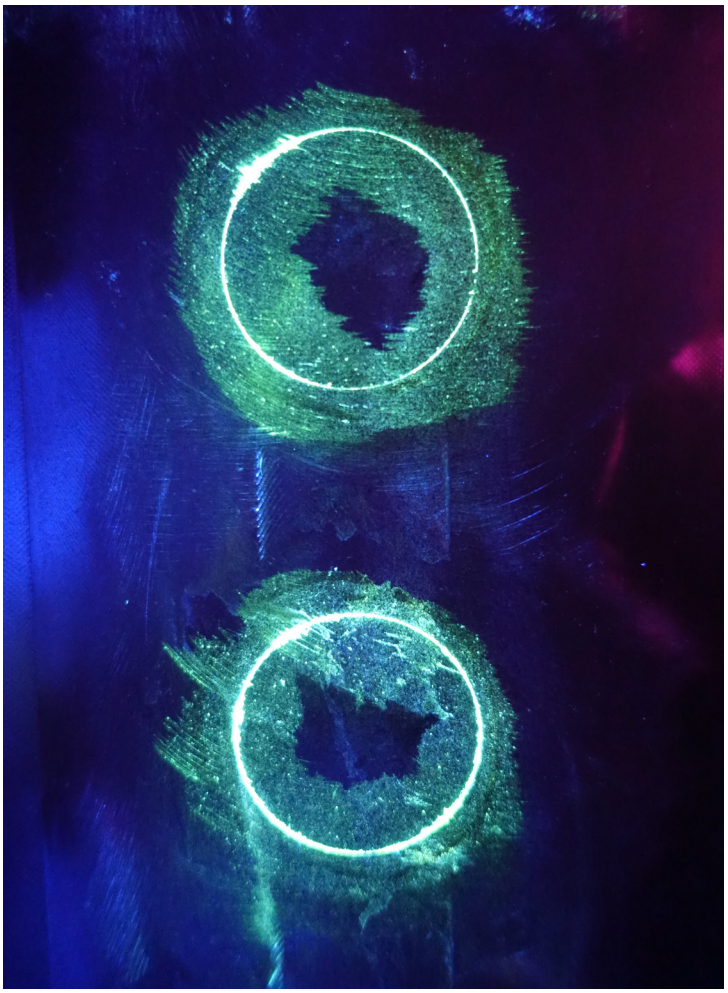
Materials and Processes Laboratory Nondestructive Evaluation

The Materials and Processes Laboratory Nondestructive Evaluation Team ensures the quality and integrity of materials, components, and systems without causing damage. By employing various testing methods, nondestructive evaluation helps detect flaws, defects, and irregularities that could lead to failures, allowing for corrective measures to be taken before costly or dangerous issues arise. Unlike traditional testing techniques that require dismantling or destroying a sample to assess its condition, nondestructive evaluation methods allow for inspection while maintaining the integrity of the sample or tested material. Nondestructive evaluation plays a critical role in improving safety, minimizing risk, and ensuring compliance with industry standards.



Computed tomography of a battery.

Large-scale automated inspection.



Fluorescent dye penetrant testing.

Capabilities

- Provides support at all stages of the product development lifecycle from preliminary research, requirements definition, technique development, capability demonstration, and production integration.
- Actively engages with academia, industry, and interagency stakeholders.
- Develops verification, validation, and certification programs for advanced nondestructive evaluation methods by proper inspector training and probability of detection studies.

Inspection Methods

- Ultrasonic inspection
  - Conventional
  - Phased array
  - Air coupled
  - Electromagnetic
- Magnetic particle inspection
- Liquid penetrant inspection
- Radiography
  - Film
  - Digital
- Eddy current inspection
- Thermography
- Computed tomography
  - High energy
  - Large format
  - Microfocus
- Shearography
- Microwave
- Acoustic emission
- Bond testing

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