# Active Sensing for Damage Identification

**Piezoelectric active materials are used for Structural Health Monitoring and Damage Prognosis.**

**www.lanl.gov/damage_id**


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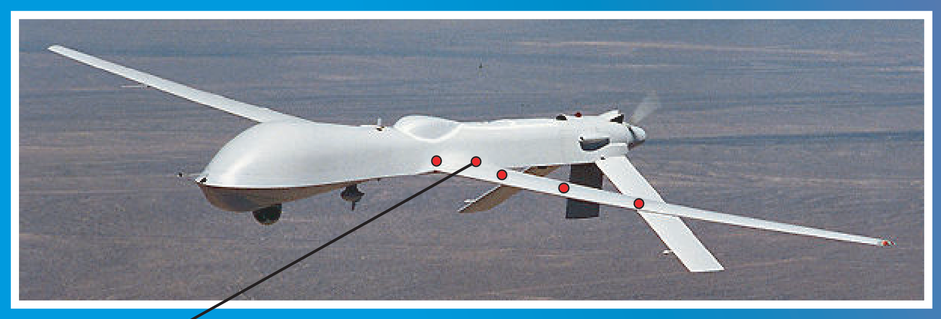
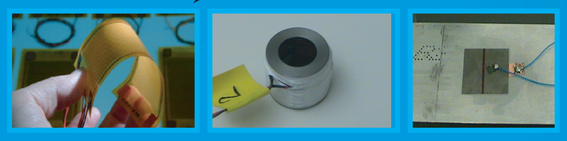
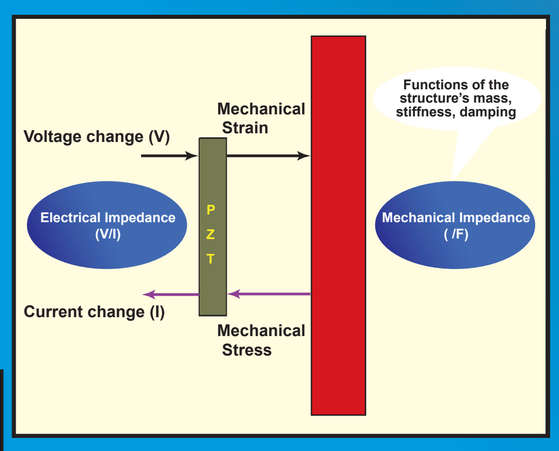


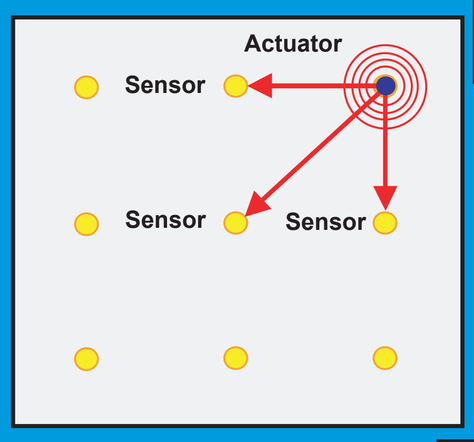


**Piezoelectric Active materials** provide known and repeatable inputs and measure subsequent responses of structural systems.

## *Multi-Scale Sensing*

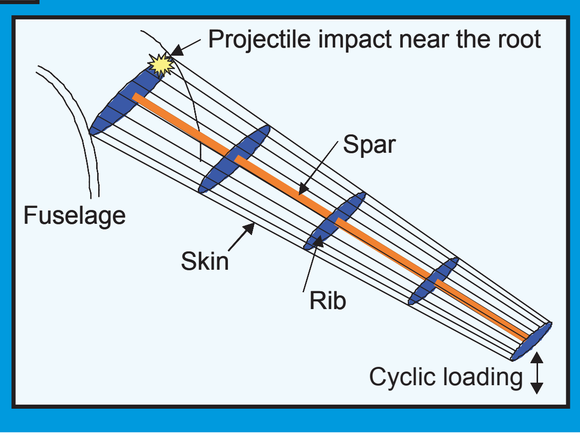
**Impedance based damage identification** utilizes the electromechanical coupling property of active materials. This self-sensing features allow one to identify incipient local damage.



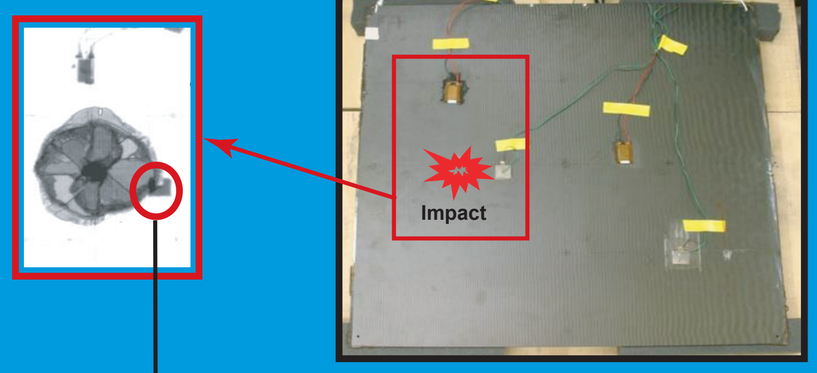



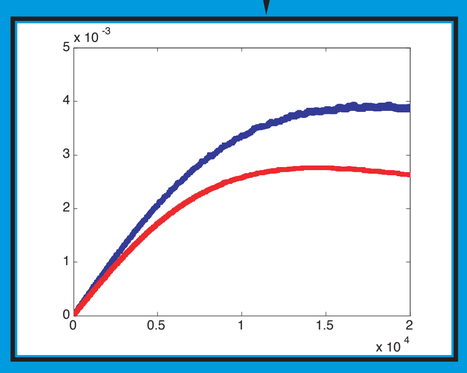

**Lamb Wave based damage identification** examines the transmitted wave signals, thereby the location, area, and types of local damage can be identified.

**Passive Global Sensing** assesses the effect of local damage on the global system level responses using the same active materials.

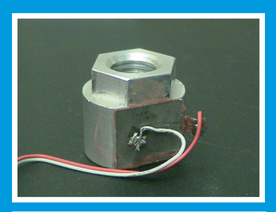


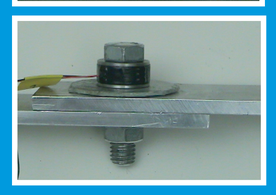

## *Active Sensor Self-Diagnostics*

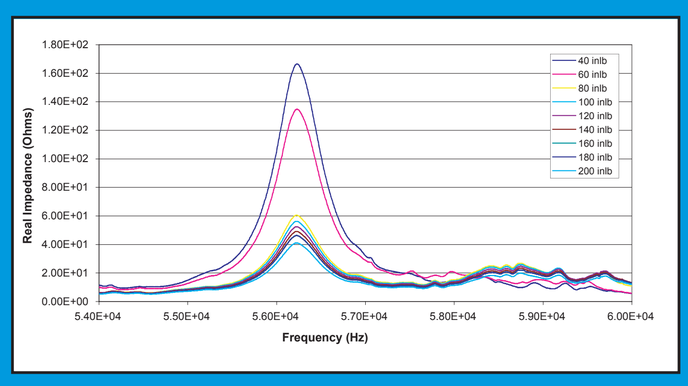



**The functionality of the sensor** and its attachment to host structure can be efficiently diagnosed.








**A device to monitor and prevent common joint failures has been developed.**

## *Self-Sensing and Repairing Joint*