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# Piezo Paint Acoustic Emission Sensor and Its Application to Online Structural Health Prognosis

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This paper presents recent work on flexible piezo paint sensor and a probabilistic fracture mechanics based framework for on-line assessment and updating of the remaining fatigue life of steel bridges. The piezo paint sensor can be adhesively bonded to curved structural surfaces like a tape. Piezo paint acoustic emission sensor passively monitors the stress wave released by crack propagation in structures and offers a promising new approach to online fatigue crack length measurement. One of the salient features of the piezo paint sensor is its ability of broadband stress-wave sensing in the ultrasonic frequency range up to 1 MHz. Broadband sensor that has less signal distortion in the specified frequency range is essential to waveform-based signal interpretation for damage detection, is also proposed here. This paper also describes a sensor-data driven structural health prognosis procedure based on acoustic emission data collected by piezo paint sensors. Field test of piezo paint sensors on a steel box-girder bridge in South Korea is briefly described. Data collected from a testbed bridge provides useful information for demonstrating the concept of the proposed piezo-paint based online bridge diagnosis and prognosis system.

**Ключевые слова:**

**Содержание.**

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