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INTEGRATED HIGH TEMPERATURE SURFACE AND PLATE ACOUSTIC WAVE TRANSDUCERS

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ABSTRACT

Piezoelectric composite films are directly sprayed onto stainless steel and aluminum alloy substrates together with interdigital transducer to form the desired surface and plate acoustic wave transducers for non-destructive testing purposes. All fabrication can be made by hand held devices and at the desired sensing site. The transducers are operated in pulse-echo mode and the center frequencies were between 0.5 and 2.0MHz. It has been operated up to 150°C. The measured results agree well with the theoretically calculated values. The integration and on-site fabrication characteristics of the transducer make such transducers excellent candidates for diagnostics and prognostics health monitoring tool.

Keywords: film piezoelectric sensors, plate and surface acoustic wave transducers, high temperature, structural health monitoring.