

Brief Biography - John C. Duke, Ph.D.

John C. Duke, Jr. has since 1978 been on the faculty of the Engineering Science and Mechanics Department of Virginia Tech; this department 2014 merged into the new Biomedical Engineering and Mechanics Department., he holds degrees from Johns Hopkins University in Mechanics and Materials Science. He is a fellow of ASME and ASNT and member of the Transportation Research Board AHD30 Structure Maintenance Committee and Chair of the TRB Subcommittee on Structural Health Monitoring, Editor-in-chief of Research in NDE and Associate Technical Editor for Materials Evaluation.

Dr. Duke began applying ultrasonic and acoustic emission based technology for detecting and tracking damage due to cyclic loading in 1975. Present efforts are directed at develop capabilities for detecting precursor damage as well as damage transitions in metal alloys and composite material systems.

From Jan 1-Dec 31, 2014 he was on Intergovernmental Personnel Act assignment from Virginia Tech to FHWA THFRC where he conducted studies concerning best practices regarding National Bridge Inspection Program Performance Metric #21 Inspection Procedures- Critical Findings, compiled a summary of State DOT activities regarding Technology Based Monitoring, and authored White Papers on Health and Performance Assessment and SHM for Safety and Serviceability of Bridges.

Areas of technical expertise:

- Acoustic emission monitor for materials characterization
- Ultrasonic wave propagation in anisotropic media
- Nonlinear thermoelastic stress monitoring
- Optical fiber sensor applications
- Structural health monitoring for maintenance of bridge structures
- SHM and NDE subject matter expert for planning and design of critical assets
- Damage science and mechanics