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Editorial

Fiber Optic Sensors

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Optical fiber sensors find increasing applications in areas ranging from structural health monitoring to biophotonic sensing. The unique properties of optical fibers and sensor structures support such progress: complete immunity to electromagnetic fields, high voltage, lightning; operation in explosive or chemically aggressive and corrosive media (energy, oil, gas); light weight, miniaturized, flexible; low thermal conductivity, temperature-resistant material (high-end and low-end temperatures); low-loss, noninterfering signal transmission, ability to operate over long distances (remote sensing), multiplexing capability (sensor networks), and structure monitoring by embedding in composite materials (smart structures).

New optical wave-guide materials and systems like plastic optical fibers, sapphire optical fiber, photonic crystal fibers, and other nanostructures stimulate corresponding new sensor developments making use of the specific material advantages.

In this issue you will find some examples of actual research, scientific technological development, and application of optical fiber sensors: a review on the status of photonic crystal fibers for sensing applications; fiber Bragg grating resonator structures resulting in an all-fiber DBR-based sensor interrogation system for measuring acoustic waves; the application of plastic optical fibers for sensing of fuel leakage in soil as well as of alcohol concentration in liquors; application of laser Doppler velocimetry for measurement of local blood velocity profiles.

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