



sensors



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Optical Sensors for Structural Health Monitoring

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The evolution and need for the preservation and maintenance of existing structures, recent or historical, has fostered research in the area of structural monitoring, translated into the development of new techniques, equipment and sensors. Early detection of damage and accurate assessment of structural safety requires monitoring systems, the data from which can be used to calibrate numerical models for structural analysis and to assess safety. Data are obtained under real-time conditions, considering a group of parameters related to structural properties, such as stresses, accelerations, deformations and displacements. The analysis of structural properties is particularly relevant when the structure is subjected to extreme events (earthquakes, wind, fire and explosions, among others) or repeated loads (road/rail/air traffic, vibrations induced by equipment and machines), since they affect the structural integrity and put the users at risk. In order to prevent the severe damage and eventual collapse of structures, and consequent human, material and economic losses, the implementation of monitoring systems becomes a valuable tool for today's society. Monitoring of structures is becoming increasingly important, not only as preventive action, but also due to actual economic and sustainability concerns, to ensure a safer and more comfortable built environment.



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