

Beyond Nanoscale Crack based Sensors: Sensitivity, Durability and Visualization for physiology detection

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With increasing demands for detection of minute bio-signals in biomedical application, there have been attempts to develop the crack-based mechanosensors, yet still lots of issues of applying crack based sensor for biomedical application including sensitivity, durability, strain visualization, are still remained. Here, we describe the functionalized nanocrack sensor by bio-inspired structures and materials for biomedical application. At first, the key factors for the crack based sensors are described by the geometries of the cracks. Secondly, we describe the durability issues by solving self-healable polymer as a passivation layer. Finally, the strain visualization issues are dealt with hierarchical thermochromism, which enables fast recovery of the visualization within 0.6s.