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Materials Research Solid State Physics and Engineering

Mechanochromism

David. J. Fisher

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Keyword: Mechanochromism, Piezochromism, Piezoelectricity, Triboluminescence, Electroluminescence, Thermoluminescence, Photoluminescence, Stress Recording, Wear Monitoring, Fracture Detection, Pressure Monitoring, Incipient Damage Detection, Shock Wave Effects, Mechanoluminescent Polymers, Nanosensors, Spiropyran, Gold Complexes, Copper Complexes, Platinum Complexes, Iridium Complexes, Tetraphenyls, Diketones, Anthracenes, Acetylenes, Azoles, Thiophenes, Polyurethane, Hydrogels, Nitriles, Triphenylamine, Naphthalimide, Pyrenes, Polymers, Phosphonium, Pyridines, Pyrimidines, Phenazine, Cyanostilbene, Diones



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Summary:

Mechanochromism (or piezochromism) refers to the emission of radiation as a result of the stressing, deforming or breaking of solids. The great current interest in these processes is due to the immense potential for monitoring and recording stresses, wear and fracture. There is, for instance, the possibility of turning such materials into optical pressuresensors and structural damage sensors. Mechanochromic polymers, for example, could visually signal sub-micron damage and failure long before macroscopic cracks became detectable. The range of such high-tech applications is almost unlimited. The book references 325 original resources and includes their direct web link for in-depth reading.

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Handbook / color print, paperback

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