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## ZnS:Mn/ Polystyrene Based Thin Films for Harvesting Optical Energy with Mechanical Impact

Introduction: Mechanoluminescent materials are the class of materials thoes produce optical signal under sudden impact. The main advantage of ML is that this phenomenon is self-powered in nature and does not require any cumbersome electric circuit for its operation.





fabricated using drop casting technique. The thicknesses of the films are maintained around 0.1mm for all the films. The films are tested for ML signature using customized drop weight setup with known impact pressure reference values ranging from 40bar to 375bar. The obtained results clearly shows that the ZnS:Mn/PS composite films are ML in nature and respond under the applied pressure. The applied pressure to light output is linear in nature, which is in agreement with the theoretical findings. The findings of this research have scope in the fields of self-powered futuristic devices for advanced applications.



Figure2:(a)Mechanoluminescence measurement setup (b) ML spectrum of ZnS:Mn/PS films under pressure range starting from 50bar to 375barZnS:Mn with spectrometer(c) Photodiode signal amplitude of films under pressure range from 50bar to 375bar

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