

Evidence and modeling of mechanoluminescence in a novel transparent glass particulate composite

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Mechanoluminescence of a transparent glass-matrix particulate composite with SrAl₂O₄:Eu,Dy particles (SAOED) was observed in compression, torsion and hydrostatic loading. Experiments show the linear dependence of the mechanoluminescence intensity with the mechanical power. A rheological model is proposed, based on the physics of delayed processes (in analogy to viscoelasticity), and on the electron trapping and de-trapping processes.

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Figure 1 : Emission de lumière au moment de l'impact d'une bille sur une plaque de verre contenant des particules SAOED.

