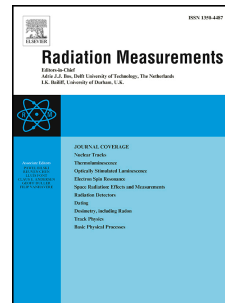


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Thermal quenching of luminescence in nanostructured monoclinic zirconium dioxide

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Thermal quenching of luminescence in nanostructured monoclinic zirconium  
dioxide

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**Abstract** – A thermal quenching effect of luminescence was studied in nanostructured compacts of monoclinic zirconium dioxide obtained by cold pressing of nanopowders. The dependence of PL intensity at 480 nm emission band on temperature was found experimentally. It was established that TL quenching causes the drop of lightsum in 390 and 485 K peaks with a growing heating rate. TL kinetic parameters values of these peaks were calculated by different methods. A simulation of lightsum dependences of the above mentioned TL peaks on the heating rate was carried out. The mechanism of luminescence thermal quenching, taking into account not only intracentral but also external electronic processes of charge transfer, is justified for monoclinic  $ZrO_2$ .

**Keywords:** Zirconium dioxide; Nanophosphors; Thermoluminescence; Thermal quenching

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