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# Present status and future trends in the development of thermoluminescent materials

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## Abstract

There is a continuous growing interest in developing materials for TL radiation dosimetry, especially in the fields of medical, environmental and personal applications. Although several phosphors are being used in these fields today, many efforts are being made in order to develop new TL materials, having better tissue equivalence, and increased sensitivity to gamma radiation, high energy photons, electrons, neutrons and heavy ions. Different preparation methods and properties of several TL materials have been studied so far and it is found that many of these materials constitute a class of TL phosphors with good performances, especially when they are doped with suitable activators

Most widely used and extensively studied materials for TL dosimetry (TLD) are fluorides, sulfates, borates and sulfides of alkali and alkaline earth elements. Besides these, have been developed other phosphors based on metal oxides and mixtures of metal oxides, halo sulfates and different kinds of glasses and perovskites. In this paper, a review of the status and future trends in the development of TL materials is presented

Keywords: Thermoluminescence, phosphors, development.

## Introduction

Thermoluminescence (TL) dosimetry has been actively developed in the past 4 decades thanks to its successful applications. Among them, the most widespread is personal dosimetry and environmental monitoring. Nowadays, TL dosimetry has been used on ever-growing scale in medical physics (radiation therapy, radiation diagnostic and nuclear medicine). Studies dealing with retrospective dosimetry and high dose at high temperature measurements are also ongoing.

The successful application of TL dosimetry aforementioned have been derived from research, development and analysis of the properties of a large number of different materials. These studies have not lost its relevance, even today, because it is continuing to develop new TL materials whose dosimetric properties and applications are being actively studied. However, very strict

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