**A Computerized Glow Curve Analysis Software written in C++**

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**Abstract**

The examination of thermoluminescent dosimeter glow curves is useful for the detection of abnormalities in dosimeter processing. When appropriately analyzed, glow curves hold added information about thermoluminescent material behavior. The mathematical separation of a glow curve into contributions from energetically different trap states, or glow curve analysis (GCA), may be utilized to remove undesired effects of signal fading for complex materials. GCA illuminates the material-specific models of thermoluminescence. In special circumstances, it could lead to improved statistical performance at low doses. Generalized computerized GCA software for the deconvolution of glow curves was written in C++. The code optimizes the fitting process utilizing either a user-specified first-order kinetics model or a one trap-one recombination level model. The code was tested using experimental glow curve data from LiF:Mg,Ti, CaF2:Dy, CaF2:Tm, and CaF2:Mn. Glow curves from a variety of different readers may be analyzed with the code. Output consists of a list of fit parameters and deconvoluted gaussian data in comma-separated-value form for easy graphing and analysis. The adaptation of the code for data obtained using complex time temperature profiles may be possible.

**Keywords**: dosimetry, first order kinetics, glow curve, Levenberg Marquardt

**Introduction**

**Methods**

***Model and Fitting Method***

***Data input/output***

***Dosimeters***

***Testing***

**Results**

***Goodness of fit***

***Complexity***

**Conclusions**

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**---- EXAMPLE ----**

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**Footnotes**

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