

Glow curve deconvolution is the process of analytically segregating a TLD glow curve into its component glow peaks, using first order kinetics algorithms. Deconvolution enables these peaks to be individually displayed, analyzed, and their areas quantified, so that absorbed dose patterns can be identified. Additional processes are the elimination of background dose and selected low order peaks. By removing the more rapidly fading Peaks One and Two, the time between exposure and readout becomes inconsequential.

The capability has long been available in batch mode for Harshaw group files. This process is now being developed for on-line use in automatic mode. As dosimeters are being read, the glow curve is analyzed, broken into component peaks, the background and Peaks One and Two subtracted, and the resulting glow curve displayed on the monitor. This enables a true evaluation of exposure and consistent comparison with other exposure data. Other features of the online operation include the ability to segregate and view all peaks of the glow curve. This paper presents sample glow curves, a summary of the mathematical processes, and comparison of data with different fade times.