Chapter 3

ANALYSIS OF EXPERIMENTAL OSL DATA

Abstract In this chapter we provide detailed R codes which show how researchers can analyze and model their experimental continuous wave OSL signals (CW-OSL), and linearly modulated OSL signals (LM-OSL). We present detailed examples for computerized analysis of OSL experimental data, using the R packages *Luminescence* and *numOSL*, and how to extract the relevant optical cross sections. On the modeling side, we present the GOT equation derived from the OTOR model, show how this equation can be integrated numerically using R, and compare with the analytical solutions for OSL, which are based on the Lambert *W* function. We show how to transform the shapeless experimental CW-OSL signals into peak-shaped LM-OSL signals, and present several examples of using the R package *RLumCarlo* to simulate OSL signals. The chapter concludes with a list of recommended protocols for analyzing OSL data in the laboratory.