The R package 'RLumModel': Simulating charge transfer in quartz

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Kinetic models of quartz luminescence have gained an important role for predicting experimental results and for understanding charge transfers in (natural) quartz as well as for other dosimetric materials, e.g., Al_2O_3:C.

We present the **R** package 'RLumModel', offering an easy-to-use tool for simulating quartz luminescence signals (TL, OSL, LM-OSL and RF) based on five integrated and published parameter sets as well as the possibility to use own parameters. Simulation commands can be created (a) using the Risø Sequence Editor, (b) a built-in SAR sequence generator or (c) self-explanatory keywords for customised sequences. Results can be analysed seamlessly using the **R** package 'Luminescence' along with a visualisation of concentrations of electrons and holes in every trap/centre as well as in the valence and conduction band during all stages of the simulation.

Modelling luminescence signals can help understanding charge transfer processes occurring in nature or during measurements in the laboratory. This will lead to a better understanding of several processes concerning geoscientific questions, because quartz is the second most abundant mineral in the Earth's continental crust.