Kinetics of infrared stimulated luminescence from feldspars - DTU Orbit (10/03/2019)

**Kinetics of infrared stimulated luminescence from feldspars**

We extend the localised transition model based on randomly varying recombination distances (Jain et al., 2012) to include Arrhenius analysis and truncated nearest neighbour distributions. The model makes important predictions regarding a) the physical understanding of the linear intercepts in the Arrhenius analysis for localised recombination systems and b) the relationship between charge depletion and shape of the luminescence decay curves; these predictions are successfully tested by experimental investigations. We demonstrate that this model successfully describes the kinetic behaviour, both thermal and optical, of the infrared stimulated luminescence signal from feldspar. Based on the application of this model, it is concluded that different infra-red stimulated luminescence emissions (UV, blue, yellow and far-red) follow the same kinetics, and, therefore, involve participation of the same electron (dosimetric) trap. The differences in thermal stabilities of the different emissions results from differences in number densities of the recombination sites. The results have implications for understanding the mechanism of the far-red emission, and the spatial distributions of recombination sites in feldspar. © 2015 Elsevier Ltd. All rights reserved.

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