A luminescence imaging system for the routine measurement of single-grain OSL dose distributions

In optically stimulated luminescence (OSL) dating and other retrospective dosimetry studies there is considerable demand for the ability to measure luminescence from individual dosimeters in the size range 50e500 mm diameter, either as separate grains or as part of a matrix. This work tests the potential of an electron multiplying charge-coupled device (EMCCD), providing extremely low level light detection. We characterize the performance of the device by discussing reproducibility and evaluating uncertainties in OSL signals. Finally we derive a typical single grain natural dose distribution with associated uncertainties. © 2015 Elsevier Ltd. All rights reserved.

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