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Phototransferred thermoluminescence in argon implanted synthetic quartz

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**Abstract content
 (Max 300 words)
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Phototransferred thermoluminescence (PTTL) in synthetic quartz samples implanted with 70 keV Ar ions at fluences ranging from 1×10^{14} and 5×10^{15} ions/cm² is reported. Subsequent to 40 Gy beta irradiation and pre-heating, PTTL was monitored as a function of illumination time from the main glow peak at 120°C using a Risø TL/OSL reader. It was observed that the PTTL signal only appears in the sample implanted at higher fluences while absent in other implanted samples. This suggests that at lower fluences the deep traps responsible for the PTTL cannot be accessed. For the sample implanted at higher fluence, the results show that the PTTL intensity increases with illumination time from 3 s to 20 s and then starts decreasing for higher illumination times. The decrease in the PTTL intensity is an indication of a loss of electrons from the trap responsible for PTTL to other traps not giving rise to the PTTL. This is evidenced by an increase in intensity of the glow curve peak at 200°C under the illumination process.

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