Properties of Tb-doped vacuum-sintered Lu_2O_3 storage phosphor.

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Streszczenie

Tb3+-doped Lu2O3 sintered ceramics were prepared in vacuum and in air. It was shown that the vacuum-sintered disks are able to store energy when irradiated with 300-nm or shorter photons. A small part of the stored energy could be recovered with 980-nm light. A much more significant amount of the stored energy could be released with red 647-nm photons. However, recovering the total stored energy could be accomplished only upon heating up to about 300 °C. Changes in absorption of the raw materials upon ultraviolet irradiation and subsequent IR (980 and 647 nm) treatments or upon heating at 300 °C are presented and discussed. A model for energy storing and recovering through the various IR irradiations or through heating is presented. At least two distinct ways of hole trapping as Tb4+ or Vk-center as well as creation of F and F+ is suggested

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