Laser assisted processing of nanocrystalline (Ho$_{0.05}$Y$_{0.95}$)$_2$Ti$_2$O$_7$ films for infrared photonics

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Abstract. In this contribution we present a versatile approach to the laser assisted treatment for the preparation of nanocrystalline (Ho$_{0.05}$Y$_{0.95}$)$_2$Ti$_2$O$_7$ thin films. The presented approach can be used to prepare active optical films for infrared photonics. The elaborated approach can be used to prepare active optical films for infrared photonics. The amorphous thin films were prepared by the sol-gel method followed by a dip coating process and densified in a rapid thermal annealing furnace. The laser irradiation induced a crystallization process resulting in the formation of nanocrystalline (Ho$_{0.05}$Y$_{0.95}$)$_2$Ti$_2$O$_7$ films. The amorphous thin films were prepared by the sol-gel method followed by a dip coating process and densified in a rapid thermal annealing furnace. The laser irradiation induced a crystallization process resulting in the formation of nanocrystalline (Ho$_{0.05}$Y$_{0.95}$)$_2$Ti$_2$O$_7$ films. 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1 Introduction

2 Experimental

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3 Results and discussion

![Fig. 1](image1.png)

**Fig. 1.** XRD patterns of the densified film and film irradiated by CO\(_2\) laser for 120 s.

![Fig. 2](image2.png)

**Fig. 2.** Transmission spectra of the densified film and film irradiated by CO\(_2\) laser for 120 s.

![Fig. 3](image3.png)

**Fig. 3.** Steady state luminescence spectrum of (Ho\(^{3+}\))TiO\(_2\) after CO\(_2\) laser assisted treatment with excitation at 450 nm and slit: 16 nm.

3 Conclusions

This work was supported by the Czech Science Foundation, contract No 22-17604S.

References

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