Phase Transition Based Luminescence Thermometry of $ZnP_2O_7:Eu^{3+}$

Anam Javaid[1#], Maja Szymczak[1], Malgorzata Kubicka[1], Łukasz Marciniak[1]

[1]Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Okolna 2, 50-422 Wroclaw, Poland.

After experiencing remarkable growth over the past decade, the field of luminescence thermometry has now matured into a well-established technology. Luminescence thermometry has emerged as an effective way to implement remote thermal reading and finds promising applications in many fields. Although many different mechanisms have already been used in thermometry, new ones are still being sought to improve the thermometric properties. A recently proposed, very promising approach is phase transition based luminescence thermometry[1,2]. In this work, we investigate the spectroscopic properties of $ZnP_2O_7:Eu^{3+}$ for which a first order phase transition from the *I2/c* to *C2/m* structures around 400 K was observed. The described phase transition modifies the shape of the Eu^{3+} ion emission spectrum, enabling this effect to be implemented for temperature sensing. The influence of dopant ion concentration and synthesis method on the thermometric properties of $ZnP_2O_7:Eu^{3+}$ will be investigated.

Acknowledgements: This work was supported by the National Science Center (NCN) Poland under project no. DEC-UMO- 2022/45/B/ST5/01629.

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corresponding author: a.javaid@intibs.pl