

SUPPORTING INFORMATION

Comparison of Performance between Single- and Multiparameter Luminescence Thermometry Methods Based on the Mn^{5+} Near-Infrared Emission

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1. Scanning Electron Microscopy

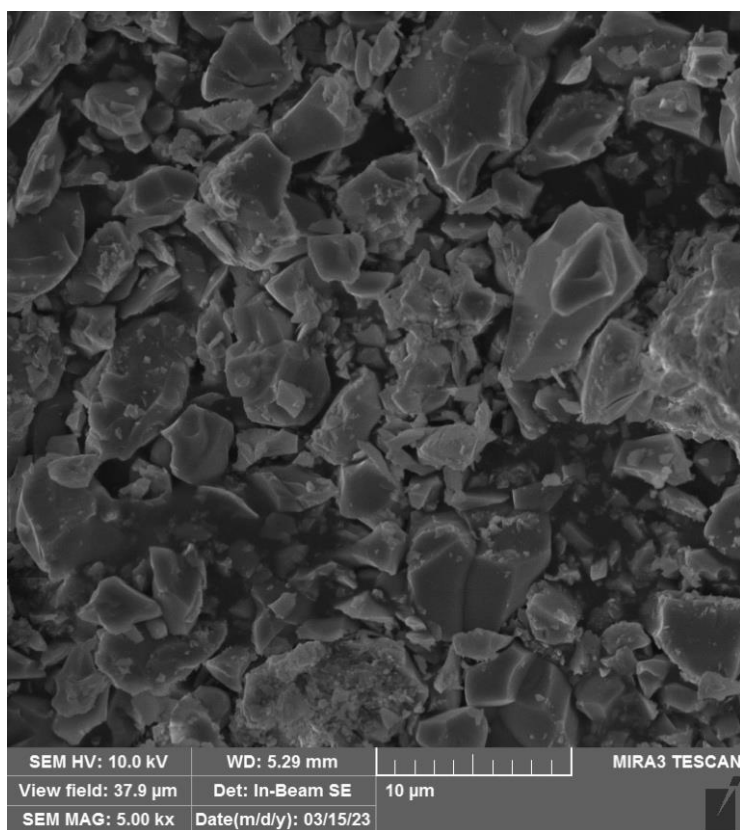


Figure S1. Scanning electronic microscopy image of $\text{Ca}_6\text{BaP}_4\text{O}_{17}:(0.75\%)\text{Mn}^{5+}$ near-infrared phosphor powder. Phosphor is composed of micron-size particles of irregular shape.

2. Powder X-ray Diffraction

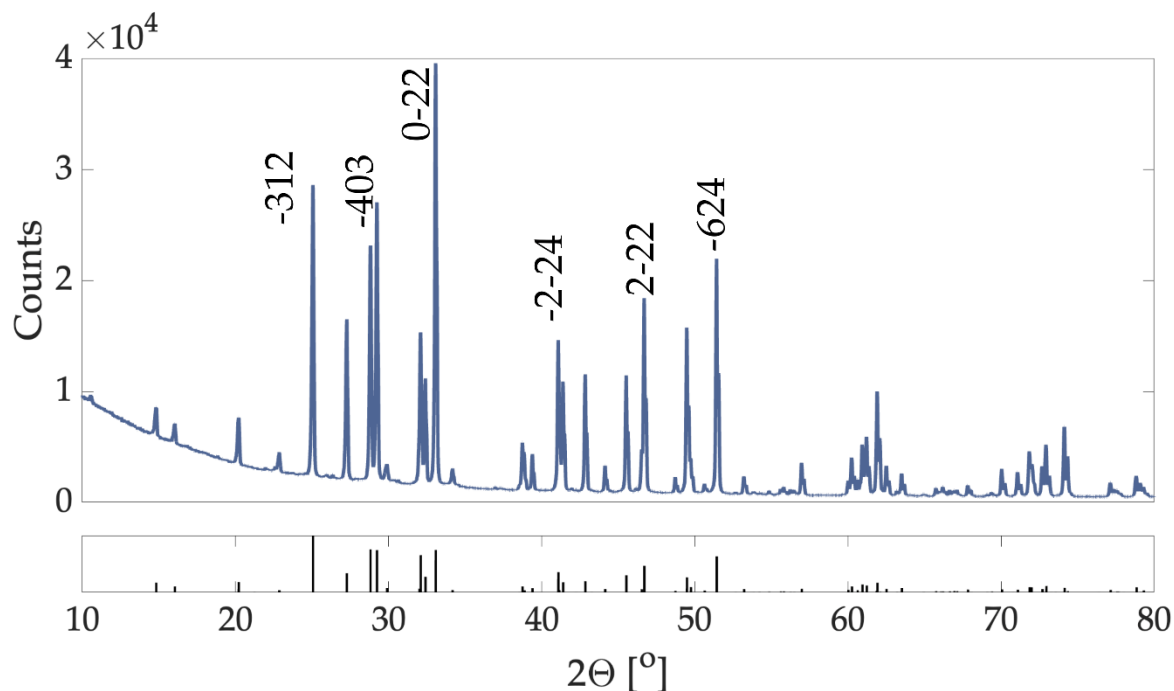


Figure S2. Powder X-ray diffractogram of $\text{Ca}_6\text{BaP}_4\text{O}_{17}:(0.75\%)\text{Mn}^{5+}$ near-infrared phosphor powder. Reflection peaks are indexed in accordance with data presented in the reference [Dramićanin, M.D.; Marciniak, Ł.; Kuzman, S.; Piotrowski, W.; Ristić, Z.; Periša, J.; Evans, I.; Mitrić, J.; Đorđević, V.; Romčević, N.; Brik, M.G.; Ma, C.-G. Mn^{5+} -activated $\text{Ca}_6\text{Ba}(\text{PO}_4)_4\text{O}$ near-infrared phosphor and its application in luminescence thermometry. *Light Sci. Appl.* **2022**, *11*, 279-292.].

3. Background Subtraction for the Evaluation of Anti-Stokes and Stokes Emission Intensities

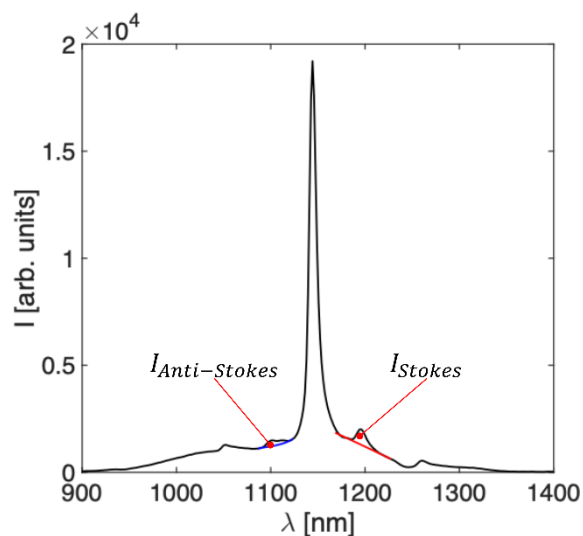


Figure S3. The removal of background emission from Stokes and anti-Stokes emission sidebands. To analyze the temperature behavior of Stokes and Anti-Stokes peaks the background is removed. This was done by fitting the third order polynomials on the emission data in the vicinity of the corresponding peaks. The values of such obtained polynomials inside the corresponding peaks were then used as a background.