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## Abstract

In this study, we define a synthetic parameter: optothermal expansivity as a quantitative guide to evaluating and optimizing both the thermal and the optical performance of PV–T functional materials. The definition of this parameter, $\psi_{AB}$ (Amlouk–Boubaker parameter), takes into account the thermal diffusivity and the optical effective absorptivity of the material. The values of this parameter, which seems to be a characteristic one, correspond to the total volume that contains a fixed amount of heat per unit time ($m^3\ s^{-1}$) and can be considered as a 3D velocity of the transmitted heat inside the material.

As the PV–T combined devices need to have simultaneous optical and thermal efficiency, we try to investigate some recently proposed materials (β-$SnS_2$, $In_2S_3$, $ZnS_{1-x}Se_x|_{0 \le x<0.5}$ and Zn-doped thioindate compounds) using the newly established $\psi_{AB}/E_g$ abacus.

**Keywords:** Solar spectrum ▪ $In_2S_3$ ▪ $ZnIn_2S_4$ ▪ optothermal expansivity ▪ effective absorbance ▪ thermal diffusivity

**PACS:** 61.82.Fk, 66.30.Xj, 66.70.Df, 78.20.Ci, 78.66.Li, 79.60.Dp, 84.60.Jt, 91.60.Ki

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