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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<sup>3</sup> s<sup>-1</sup>) 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<sub>2</sub>, In<sub>2</sub>S<sub>3</sub>,  $ZnS_{1-x}Se_x|_{0 \le x < 0.5}$  and Zn-doped thioindate compounds) using the newly established  $\psi_{AB}/E_{\alpha}$  abacus.

**Keywords:** Solar spectrum  $= In_2S_3 = ZnIn_2S_4 = optothermal expansivity = In_2S_3 = ZnIn_2S_4 = optothermal expansivity = In_2S_3 = In_2S_4 = optothermal expansivity = In_2S_3 = In_2S_4 = optothermal expansivity = In_2S_4 = optothermal expan$ effective absorbance - thermal diffusivity

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