



## **Packed bed of ceramic as solar reactor for solar water splitting**

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### **ABSTRACT**

The main objective of this study is to analyse numerically using finite volume method the conversion of solar radiation to thermal energy through a packed bed of ceramic in order to predict the thermal and flow behavior under different operational conditions (Inlet velocity, packing arrangement and solar concentrated flux). The temperature behaviors of the solid & the fluid phases were attained using the LTNE (local thermal non-equilibrium model) energy model. This model shows high reliability compared to experimental data. The results illustrate that the studied packed bed thermo physical parameters effect substantially the temperature distribution. Results show that the maximal temperature Achieved of the packed bed is around 1600 K with absorber properties (Mean particle diameter = 0.72 mm, / Porosity = 0.476) for a mean solar concentration of 2 KW

**Keywords:** Packed bed; Ceramic balls; Temperature; Properties; heat flux **Themes:**

Hydrogen Energy

