

Laser Flash Technique Used in Thermal Characterization of Materials Applied in Solar Reactors

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Hydrogen (or syngas) is an environmentally attractive and promising energy carrier transport fuels with a great outlook for growth and application in industrial processes. Hydrogen can also be stored, distributed and used for a variety of technologies. Hydrogen can be produced from a variety of sources such as wind, biomass, nuclear, etc. or by means of solar energy through thermochemical reactions. Solar thermochemical two step cycles are advantageous due to their ease of application to process scale; these cycles involve redox reactions metal oxide type. The development and characterization of the materials employed in chemical reactions to produce hydrogen and materials required for construction of solar reactors are critical to understand the phenomena involved in the process of transferring mass and heat quantity. Solar technology operating in high temperature conditions, such as those required in power generation, demand accurate knowledge of the optical and thermal properties of the materials involved. This knowledge allows to determine the performance of materials, also helps us in developing designs and emissivity heat fluxes that can be used as parameters in computer models to predict the behavior, performance and reliability of systems in the desired temperature range. One of the best possibilities for measuring the properties of heat transfer is based on the photothermal techniques that analyze the radiation emitted by a material when this is illuminated with pulsed or modulated radiation. In this work the laser flash technique for thermal characterization of the properties of materials involved in chemical reactions for the production of hydrogen is used