



Nonstoichiometric Perovskite-Type Oxides for Solar Thermal Fuels Production

Michael Sanders, Jianhua Tong, Meng Shang, and Ryan O'Hayre

Summary: Characterization of promising non-stoichiometric-perovskite-type oxide catalysts for solar thermochemical fuel productions

Description: Solar thermochemical (STC) fuel production is a process that utilizes concentrated solar radiation to thermochemically split water molecules to hydrogen and oxygen. While this process has high theoretical efficiencies, current STC methods fall significantly short of this potential and are primarily limited by the lack of adequate redox materials. This invention relates to a STC method that utilizes non-stoichiometric-perovskite-type oxides. A framework was developed for implementing the rapid screening and characterization of promising oxide candidates by x-ray diffraction and a novel thermogravimetric STC redox cycle screening experiment. Several perovskites with thermodynamic redox properties are potentially highly active catalysts for the solar-thermal splitting of water as well as carbon dioxide decomposition and synthesis gas production.

Main Advantages of this Invention

- High-efficiencies

Potential Areas of Application

- Biofuel production

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Intellectual Property Status: US utility patent pending (application 14/621,091)

Opportunity: We are seeking an exclusive or non-exclusive licensee for marketing, manufacturing, and sale of this technology.

For more information contact:

William Vaughan, Director of Technology Transfer
Colorado School of Mines, 1500 Illinois Street, Guggenheim Hall Suite 314, Golden, CO 80401
Phone: 303-384-2555; e-mail: wvaughan@mines.edu