Georgia Tech

Atomistic Simulation & Energy
A.S.E. Research Group

Research Engineer/Project Manager Position

One research engineer/project manager position is available starting from February 2013 in the Atomistic Simulation & Energy (A.S.E.) research group at Georgia Tech. The primary function for this position is to lead the construction and testing of two lab scale prototype high temperature liquid metal loops for a concentrated solar application. One liquid metal loop will be tested in a solar simulator, while the second test loop will involve thermochemical reactors designed for water splitting/hydrogen production. The idea (see Fig. 1 on page 2) is to capture highly concentrated sunlight ($\geq$ 5 MW/m^2) at high temperature $\geq$ 1300°C in the sensible heat of a liquid metal heat transfer fluid (i.e. tin). The sensible heat can be later used for direct power generation or thermochemical fuel production (water splitting) as a new route to clean, renewable and dispatchable utility scale electricity generation.

The primary objective of the project is to design, construct, test and optimize the prototype solar receiver and thermochemical reactors for maximum efficiency and reliability. This will involve finding and interacting with appropriate vendors; designing constructing, testing and integrating air cooled heat exchangers for cooling the liquid metal; designing and integrating electronically controlled valves to control the liquid metal flow; assembling and integrating a housing chamber to maintain an inert N_2 environment and setting up all necessary data acquisition. The project manager aspect of this position is centered on coordinating and managing the efforts of several postdoctoral research associates and graduate students, while also being responsible for the quarterly reporting requirements to the funding agency. Responsibilities include carrying out independent research, writing publications, presentations and reports, coordinating the team effort and interacting with sponsors. Highly motivated and hardworking candidates with a background in liquid metal loop construction and testing, high temperature experiments in inert environments, prototype construction and testing and related fields are strongly encouraged to apply immediately. Expertise or experience with all aspects of the project is not expected, however, experimental experience is requisite. Please send a CV, representative publications, a short one paragraph description of career goals and why you're interested in this project, as well as contact information for three references to Asegun Henry (ase@gatech.edu). Review of applications will start immediately and will continue until the position is filled.

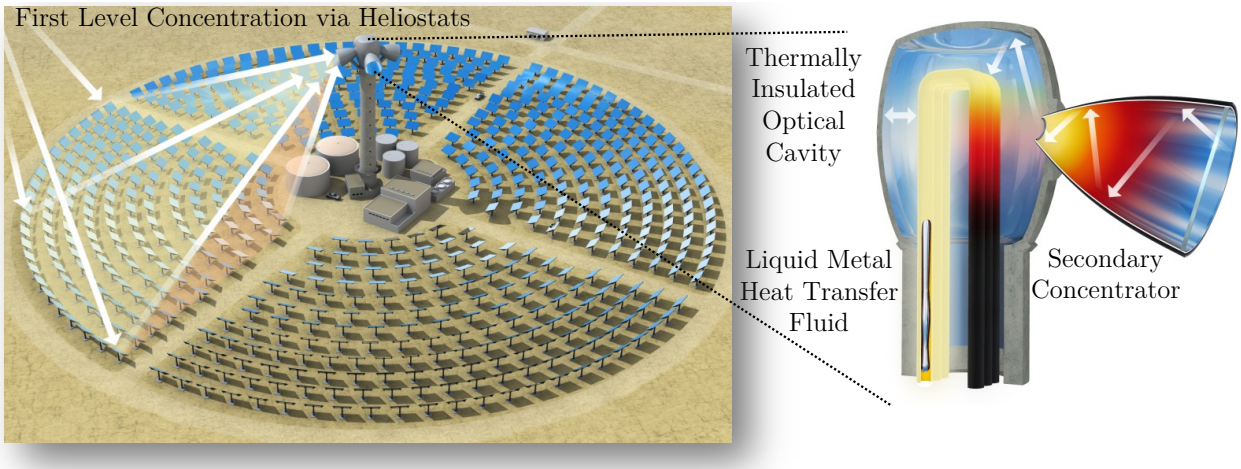

FIG 1. Conceptual Depiction of High Temperature Concentrated Solar Power (CSP) System. Light is collected by a field of heliostats (flat mirrors) and concentrated into a secondary concentrator mirror. The highly concentrated light is released into an optical cavity that contains pipes made from a refractory material. Liquid metal tin flows through the pipes and absorbs the heat. The liquid metal is later used to generate electricity via heat engine, or generate fuel via thermochemical reactor.