

A Simple Heat and Mass Transfer Model for Salt Gradient Solar Ponds

Authors : Safwan Kanan, Jonathan Dewsbury, Gregory Lane-Serff

Abstract : A salinity gradient solar pond is a free energy source system for collecting, converting and storing solar energy as heat. In this paper, the principles of solar pond are explained. A mathematical model is developed to describe and simulate heat and mass transfer behavior of salinity gradient solar pond. Matlab codes are programmed to solve the one dimensional finite difference method for heat and mass transfer equations. Temperature profiles and concentration distributions are calculated. The numerical results are validated with experimental data and the results are found to be in good agreement.

Keywords : finite difference method, salt-gradient solar-pond, solar energy, transient heat and mass transfer

Conference Title : ICEES 2014 : International Conference on Energy and Environmental Sciences

Conference Location : London, United Kingdom

Conference Dates : January 20-21, 2014