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Enhanced solar thermal evaporation of Ethanol–water mixtures, through the use of porous media

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A significant enhancement of solar irradiation induced evaporation of water, and ethanol–water mixtures, through the use of carbon foam based porous media, is demonstrated. A relationship between the consequent rate of mass loss, with respect to the equilibrium vapor pressure, dynamic viscosity, surface tension, and density, was developed to explain experimental observations. The evaporative heat loss was parametrized through two convective heat transfer coefficients—one related to the surface and another related to the vapor external to the surface. The work promotes a better understanding of thermal processes in binary liquid mixtures with applications ranging from phase separation to distillation and desalination.

Biography

Fatih Canbazoglu is a PhD candidate at University of California, San Diego. He worked on thermal metamaterials and solar steam generation (desalination and distillation) for his PhD.

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