

## **Abstract**

In this study, the performance of a solar-thermal powered adsorption cooling system based on HKUST-1-water (a type of metal organic framework) working pair for a detached single story family house located in two geographically diverse areas of South Texas was investigated. Using TRNSYS, the optimal system parameters such as collector area and chiller loop mass flow rate were determined to maximize the solar fraction of the cooling system. Based on the simulation results, it is possible to obtain monthly average solar fraction value of 0.7 or above during most of the cooling season (i.e., Apr to Nov) in both locations. For the same operating parameters, solar fraction in Kingsville, TX is slightly higher than the El Paso, TX.

## **Citation**

DE Demirocak, B Kumar & Y Kolatkar, "Strategies to Improve Solar Fraction in an Adsorption Cooling System Based on Metal Organic Frameworks in Humid and Dry Climates – A Case Study for Southeast and Southwest Texas", ASME 2016 International Mechanical Engineering Congress and Exposition, Phoenix, AZ, USA, November 11-17, 2016.