Abstract:

Energy, whether non-renewable or renewable, is vital for the survival of all the living things on this planet. The growing human population all over the world has increased the demand for energy resources and energy from the sun has earned significant interest in recent times. However, the efficiency, cost, and longevity of the absorber plates that are commercially used have been a common issue. In this paper, an attempt has been made to make an absorber plate for a solar dryer and make better use of renewable solar energy. The goal is to fabricate an absorber plate capable of transferring heat and low in price for the people of Bangladesh. For this, similar past works were studied thoroughly and a literature review was made for a reliable comparison. From there, several coating materials were shortlisted as a candidate for this research project. After observing that Nickel oxide nanoparticles serve as the best coating material for this work, simulations of the computational model were performed using Excel spreadsheets. Based on simulation results, the plan is to fabricate an affordable plate and analyze the performance by different characterizations for applying in practical uses such as solar dryers, solar stills, etc. The computational model was validated with the work of similar research which will be discussed below.