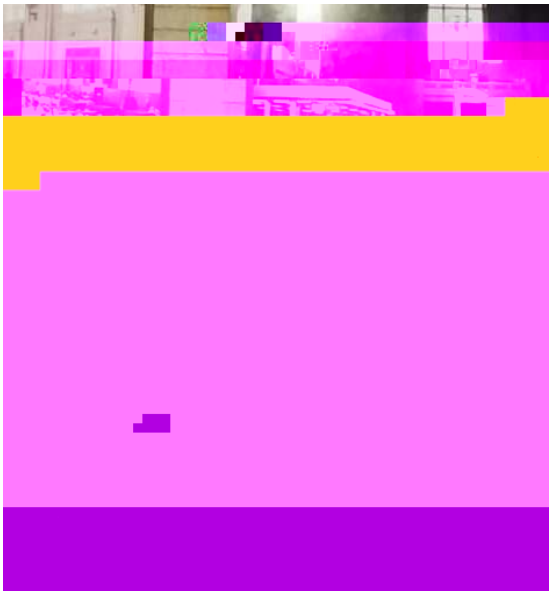

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Biphillic Surface Coating for Efficient Solar Thermal Based Water Desalination System.

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A water desalination is a process to filter contaminants (salt and minerals) from water. Solar-thermal energy is an attractive source of energy to produce clean water through the water evaporation and condensation, but one of the bottlenecks for this approach is a sluggish condensation rate. Some surfaces are hydrophilic, which means water loving while some are hydrophobic which means water fearing. The angle between the surface and the water droplets determines whether the material is hydrophilic or hydrophobic. In hydrophilic materials water droplets spread evenly forming an angle less than 90 degrees which results a maximum contact area. In contrast, water droplets on hydrophobic surfaces make a contact angle greater than 90 degrees, thus making minimum contact with the surface. When water droplets are formed on vertical or tilted surfaces they tend to fall down due to the effects of gravity. The time taken for the droplets to fall and the speed at which it takes place has an immense impact on water desalination systems. The efficiency of water desalination system could be enhanced by decreasing the time of formation of droplets and by increasing the speed and decreasing the time that water droplets take to slide along the surface. These will ultimately lead to decrease of energy wasted by the system.