

CONTRIBUTED TALK

Quantification of steady state evaporative heat flux of natural porous media using an optical method

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Evaporative coolers are widely used for HVAC in hot and dry climates, and electronics cooling. While recent advances in wick design have focused on engineered, additive manufactured models, Jute has been extensively researched and largely used as a natural wick for evaporative cooling. However, the characterisation of such natural porous media wicks and highly engineered wicks in a comparable platform has received limited attention. This work employs an optical method to precisely quantify quasi-steady evaporative heat flux of a 3D printed synthetic wick, a Natural Porous wick and a hybrid structure. Findings show that the measurements distinguish between each other and establishes the Jute based wick structure as a viable baseline with a 2819 Wm^{-2} heat flux for engineered wick optimisation in passive cooling applications.