

Nithin MALLYA



Highest Graduation: MSc from ETHZ in Mechanical Engineering in 2016

Current Position: Doctoral Student at EPFL since Dec. 2016

Research Interest: Thermal Energy Storage, CFD and thermal simulations

Link to CV: <https://www.linkedin.com/in/nithinmallya/>

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Most Important Publication/Presentation:

An experimental and numerical investigation of the combustion and heat transfer characteristics of hydrogen-fueled catalytic microreactors

<https://www.sciencedirect.com/science/article/pii/S0009250915007083>

Research Project:

With higher heat of fusion and two orders of magnitude larger conductivity over the commonly used metal salts and organic acids, metal alloy phase change materials (PCMs) improve the storage capacity and charging-discharging time for high temperature latent heat storage. With the increased conductivity of the PCMs, the heat transfer from the heat transfer fluid (HTF) becomes the limiting factor for high energy and power density storage. We aim at creating a tool to design application specific macro-porous heat storage systems with optimized surface area. We accurately model the phase change process, multi-mode heat transfer within and around the encapsulated PCM structures including direct pore-level simulations arbitrarily complex shaped macro-porous structures. Numerical structural optimization using neural networks of percolating 3D encapsulated macro-porous units are performed to enhance the limiting convective heat transfer rate from the HTF to the encapsulated PCMs.