Capillary assisted low pressure combined evaporator and condenser

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- Porous copper coated evaporator and condenser
- Combined evaporator and condenser to reduce the cost

Surface properties characterization
- Surface Properties: Hydrophobic vs hydrophilic

Combining evaporator and condenser

- Monitoring System
- Combined evaporator and condenser
- Temperature Control Systems

Analytical modeling
- Liquid axial flow, pool boiling, 2D bulk heat transfer, thin film evaporation, and non-evaporating region

Optimization
- Genetic algorithm was used for optimization
- 6 geometry parameters were considered as variables
- A 84\% increase in cooling capacity can be achieved by using optimized design points

Optimal design manufacturing
- Spray coated low pressure capillary evaporator was successfully tested as a condenser
- Optimization based on heat exchanger geometry lead to power density improvement
- An optimized combined evaporator and condenser can be 3D printed