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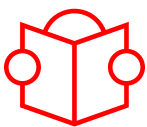
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Research field
Chemical engineering

PhD title
**Evaporative cooling aided by
dehumidification combined with water
harvesting. Quest for advanced adsorbents
and systems.**



Keywords

- evaporative cooling
- water harvesting
- water vapor adsorption
- porous materials
- metal-organic frameworks

Summary

North African countries are known for their hot climates requiring a permanent air-conditioning supply almost throughout the year. The currently used air conditioning system, the vapor compression system, is associated with several drawbacks, such as the high cost and refrigerants' toxicity. The alternative evaporative cooling is an eco-friendly cooling technology,

but the cooling efficiency is very low under humid conditions. Pre-drying or dehumidifying the air using a porous adsorbent is expected to increase the system's cooling efficiency. This work then aims at developing an adsorptive dehumidification system using porous solids. The adsorbents will be made and tested in real conditions to selectively adsorb water from humid air.



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