



Contribution ID: 169

Type: Oral Presentation

## Mesoporous, Moisture-Absorbent, Temperature-Controlled Hydrogels For Atmospheric Water Harvesting

*Monday, 31 May 2021 09:55 (15 minutes)*

Water scarcity is one of the biggest challenges of the 21st century. Using desiccants to harvest water from air is a promising way to address this challenge. However, most desiccants require considerable energy input to release absorbed water as vapor and then condense it. Here, we overcome this limitation by developing Moisture-Absorbent, Temperature-Controlled Hydrogels (MATCHes) that absorb water from air at ambient conditions, and then release it in liquid form upon slight heating. Furthermore, we show that tuning the mesoscale porosity of the hydrogels dramatically impacts both the total amount and rate of water absorption and release —highlighting a previously-overlooked factor that regulates MATCH performance. Our work therefore demonstrates a new route to fabricating desiccants capable of harvesting water from air quickly, to a large extent, and with minimal energy cost.

### Time Block Preference

Time Block B (14:00-17:00 CET)

### References

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**Session Classification:** MS4

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