

Publications and Patents

Status: January 2025

Dissertation (PhD Thesis)

Schaefer, M.: „*Modeling and simulation of closed low-pressure adsorbers for thermal energy storage*“, University of Stuttgart, 2019, Summa cum laude, <http://dx.doi.org/10.18419/opus-10487>

International Journal Papers with peer-review

- [9] Li, Y.; Shkatulov, A.; Linder, M.; Schaefer, M.; Thess, A.; Li, B-W: “*Enhancing Reactivity of Na₂Zn(SO₄)₂ Hydrates by Doping for Thermochemical Energy Storage*”, *Renewable Energy*, 2025 (under review)
- [8] Haeuslein, D.; Schmidt-Vollus, R.; Popp, M.; Schaefer, M.: “*Dynamic modeling, design and simulation of a thermal pumped piston storage within a renewable energy distribution system*”, *Energy Storage*, Elsevier, 2024, <https://doi.org/10.1016/j.est.2024.113348>
- [7] Li, Q.; Boeckmann, O.; Schaefer, M.: „*Systematic screening and evaluation for an optimal adsorbent in a facade-integrated adsorption-based solar cooling system for high-rise buildings*”, *Energy*, Elsevier, 2024, <https://doi.org/10.3390/en17071706>
- [6] Bockemann, O.; Marmullaku, D.; Schaefer, M.: „*Dynamic Modeling and Simulation of a Facade-Integrated Adsorption System for Solar Cooling of Lightweight Buildings*“, *Energies*, MPDI, 2024, <https://doi.org/10.1016/j.energy.2024.133092>
- [5] Greiner, A.; Boeckmann, O.; Weber, S.; Ostermann, M.; M. Schaefer: „*CoolSkin: A Novel Façade Design for Sustainable Solar Cooling by Adsorption*.“ In: *Journal of Facade Design and Engineering*, 2022, <https://doi.org/10.47982/jfde.2022.powerskin.3>
- [4] Schaefer, M.; Raab, A.; Gerle, M.; Pfeiler, D.; Vogel, J.; Thess, A.: “*Development of a zero-energy-sauna: Simulation study of thermal energy storage*”, *Energy and Buildings*, Elsevier, 2021, <https://doi.org/10.1016/j.enbuild.2021.111659>
- [3] Schaefer, M.; Thess, A.: “*Modeling and simulation of closed low-pressure zeolite adsorbers for thermal energy storage*” *International Journal of Heat and Mass Transfer*, Elsevier, 2019, <https://doi.org/10.1016/j.ijheatmasstransfer.2019.05.029>
- [2] Schaefer, M.; Thess, A.: “*Simulation of a closed low-pressure honeycomb adsorber for thermal energy storage*”, *International Journal of Heat and Mass Transfer*, Elsevier, 2018, <https://doi.org/10.1016/j.ijheatmasstransfer.2018.05.052>
- [1] Schaefer, M.; Thess, A.: “*One-dimensional model of a closed low-pressure adsorber for thermal energy storage*” *International Journal of Heat and Mass Transfer*, Elsevier, 2017, <https://doi.org/10.1016/j.ijheatmasstransfer.2017.09.095>

Conference Proceeding Papers with peer-review

- [8] Gschweng, M.; Heidingsfeld, J.; Böckmann, O.; Schäfer, M.; Böhm, M.; Sawodny, O.: „*Evaporator Temperature Control of a Solar-Powered Adsorption Façade System*“, CCTA, 2024
- [7] Böckmann, O.; Borschewski, D.; Weber, S.; Schäfer, M.: „*Simulation-based determination of system size and energy savings for a life cycle assessment of a facade-integrated adsorption system for solar cooling of buildings*“, *BauSim*, 2024

- [6] Böckmann, O.; Baumann, M.; Schäfer, M.: „*Modeling and simulation of a facade-integrated thermochemical energy storage system for solar cooling of buildings*“, Eurosun, 2024
- [5] Böckmann, O.; Weber, S.; Schedler, A.; Schäfer, M.: „*First experimental investigations of a facade-integrated adsorption system for solar cooling*“, Eurosun, 2024 (under review)
- [4] Dubies, T.; Böckmann, O.; Schäfer, M.: „*Material Study for a Facade-Integrated Adsorption System for Solar Cooling of Buildings*“, IRES, 2023
- [3] Weber, S.; Boeckmann, O.; Greiner, A.; Park, S.; Schaefer, M.; Ostermann, M.; Leistner, P.: „*Optimal operation and conceptual design of a novel façade-integrated adsorption cooling system*“, In: Proceedings of EuroSun2022 (2022)
- [2] Heidingsfeld, J.; Boeckmann, O.; Boehm, M.; Schaefer, M.; Sawodny, O.: „*Low Order Hybrid Model for Control Design of an Adsorption Facade System for Solar Cooling*“. In: 2022 IEEE Conference on Control Technology and Applications (CCTA) IEEE (2022). DOI: <https://doi.org/10.1109/CCTA49430.2022.9965991>
- [1] Schaefer, M. et al.: [Transversal vibrations of beams with boundary damping in the context of animal vibrissae](#). 56th International Scientific Colloquium, Ilmenau, 2011

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- [4] Schaefer, M.; Rudek, A. et al.: „Gas dehumidification system“, US-Patentanmeldung 18/781,193; TREAVES GmbH, 2024
- [3] Schaefer, M.; Rudek, A. et al.: „An integrated thermal management system“, US-Patentanmeldung 18/781,204; TREAVES GmbH, 2024
- [2] Schaefer, M.; Vogel, J.; Pfeiler, D.: „Windenergieanlage mit thermo-mechanischem Energiespeicher- und Energiewandlersystem zum klimaneutralen, umweltfreundlichen und energieautarken Betrieb einer Saunaanlage“, Gebrauchsmuster 202018005659, Universität Stuttgart, 2018
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