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## Employment

### Adjungeret Lektor

Other  
AAU Energy  
The Faculty of Engineering and Science  
Aalborg Øst, Denmark  
2 Jun 2025 → 1 Jul 2030

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## Research outputs

### CLEAN BIOCIDES

Thomsen, M. H. (Inventor), Stein, J. L. (Inventor), Chaturvedi, T. (Inventor) & Skovhus, T. L. (Inventor), 17 Jul 2025, IPC No. A01P 1/00 A I, World Intellectual Property Organization (WIPO), Patent No. WO2025149672, 13 Jan 2025, Priority date 12 Jan 2024, Priority No. DK2024PA70009

### Seasonal chemical variations of South Denmark's organic municipal waste and its estimated bioenergy potential

Rudnyckij, S., Kucheryavskiy, S., Spedtsberg, E. M. L., Chaturvedi, T. & Thomsen, M. H., Mar 2025, In: Biomass & Bioenergy. 194, 107659.

### Applicability of Yeast Extract in Postgate Culture Medium for Microbiologically Influenced Corrosion Tests

Stein, J. L., Chaturvedi, T., Skovhus, T. L. & Thomsen, M. H., Jan 2025, In: Corrosion. 81, 1, p. 48-57 10 p.

### Microbial biomass production from enzymatically saccharified organic municipal waste and present microbial inhibitors

Rudnyckij, S., Chaturvedi, T. & Thomsen, M. H., 2025, (E-pub ahead of print) In: Biomass Conversion and Biorefinery.

### Optimized isolation of phenolic compounds from aqueous extract of the halophyte *Salicornia ramosissima*

Fredsgaard, M., Tchoum Tchoua, J., Kohlen, S., Chaturvedi, T. & Thomsen, M. H., 2025, (Submitted).

**Understanding and Modeling Corrosion in CO<sub>2</sub> Transportation Pipelines: Findings from the Carbon Adapt Project**  
Chaturvedi, T., Hansen, D. S., Ostadi, M. & Pedersen, S., 2025, (Accepted/In press) *AIChE Annual Meeting*. American Institute of Chemical Engineers

**Organic waste and beechwood cellulose blend saccharification and validation of hydrolysates by fermentation**  
Rudnyckyj, S., Kucheryavskiy, S., Chaturvedi, T. & Thomsen, M. H., 14 Nov 2024, In: *Applied Microbiology and Biotechnology*. 108, 517.

**Isolation of Polyphenols from Aqueous Extract of the Halophyte *Salicornia ramosissima***  
Fredsgaard, M., Tchoum Tchoua, J., Kohnen, S., Chaturvedi, T. & Thomsen, M. H., Jan 2024, In: *Molecules*. 29, 1, 220.

**Protein production from halophyte juice via lactic acid bacteria acidification and subsequent yeast fermentation**  
Rudnyckyj, S., Hulkko, L. S. S., Chaturvedi, T. & Thomsen, M. H., 2024.

**MIC mitigation comparison of Halophyte-extract against THPS and Glutaraldehyde: A benchmarking experiment**  
Stein, J. L., Chaturvedi, T., Skovhus, T. L. & Thomsen, M. H., 14 Nov 2023. 1 p.

**Low-dosage enzymatic hydrolysis of organic municipal waste for sugar and ethanol production**  
Rudnyckyj, S., Chaturvedi, T. & Thomsen, M. H., 12 Sept 2023, In: *Biomass Conversion and Biorefinery*.

**Phenolic Compounds in *Salicornia* spp. and Their Potential Therapeutic Effects on H1N1, HBV, HCV, and HIV: A Review**  
Fredsgaard, M., Kaniki, S. E. K., Antonopoulou, I., Chaturvedi, T. & Thomsen, M. H., 10 Jul 2023, In: *Molecules*. 28, 14, 5312.

**Harnessing the Value of *Tripolium pannonicum* and *Crithmum maritimum* Halophyte Biomass through Integrated Green Biorefinery**  
Hulkko, L. S. S., Chaturvedi, T., Custódio, L. & Thomsen, M. H., Jul 2023, In: *Marine Drugs*. 21, 7, 380.

**Halophyte Extract-based Biocide vs. Conventional Biocides: A benchmarking experiment**  
Stein, J. L., Chaturvedi, T., Skovhus, T. L. & Thomsen, M. H., 12 May 2023. 1 p.

**Bioactive Extracts from *Salicornia ramosissima* J. Woods Biorefinery as a Source of Ingredients for High-Value Industries**  
Hulkko, L. S. S., Rocha, R. M., Trentin, R., Fredsgaard, M., Chaturvedi, T., Custódio, L. & Thomsen, M. H., 9 Mar 2023, In: *Plants*. 12, 6, 1251.

**Low-Dosage Enzymatic Decomposition of OFMSW for Sugar Recovery and Ethanol Production**  
Rudnyckyj, S., Chaturvedi, T. & Thomsen, M. H., 2023. 1 p.

**UPCYCLING OF MUNICIPAL SOLID WASTE WITH *HERMETIA ILLUCENS* (L.)**  
Chaturvedi, T., Schou, T. M., Nøhr, M., Rudnyckyj, S. & Thomsen, M. H., 2023, In: *European Biomass Conference and Exhibition Proceedings*. p. 186-189 4 p.

**Cultivation and characterisation of *Salicornia europaea*, *Tripolium pannonicum* and *Crithmum maritimum* biomass for green biorefinery applications**  
Hulkko, L. S. S., Turcios, A. E., Kohnen, S., Chaturvedi, T., Papenbrock, J. & Thomsen, M. H., Dec 2022, In: *Scientific Reports*. 12, 1, 20507.

**Importance of the Multiple Lines of Evidence (MLOE) approach in Diagnosing Microbiologically Influenced Corrosion (MIC)**  
Stein, J. L., Chaturvedi, T., Skovhus, T. & Thomsen, M. H., 29 Nov 2022.

**Biohydrogen Production in Microbial Electrolysis Cells Utilizing Organic Residue Feedstock: A Review**  
Jensen, L. S., Kaul, C., Juncker, N. B., Thomsen, M. H. & Chaturvedi, T., Nov 2022, In: *Energies*. 15, 22, 8396.

**Valorisation of Salicornia Waste Biomass Through Green Biorefinery**

Hulkko, L. S. S., Chaturvedi, T. & Thomsen, M. H., Nov 2022.

**Extraction, Isolation, and Purification of Value-Added Chemicals from Lignocellulosic Biomass**

Chaturvedi, T., Hulkko, L. S. S., Fredsgaard, M. & Thomsen, M. H., Sept 2022, In: Processes . 10, 9, 1752.

**Investigation and optimization of heat and enzymatic pretreatments of OFMSW and its combination with cellulose**

Rudnycky, S., Chaturvedi, T. & Thomsen, M. H., Sept 2022.

**Optimization of enzymatic hydrolysis for utilization of food waste**

Krail, L., Chaturvedi, T., Spedtsberg, E. M. L., Stein, J. L. & Thomsen, M. H., 31 Aug 2022.

**Optimization of Extraction Conditions for Production of Halophyte-based Biocides for Microbiologically Influenced Corrosion (MIC) Mitigation**

Stein, J. L., Chaturvedi, T., Skovhus, T. L. & Thomsen, M. H., 30 Aug 2022.

**Clean Biocide Project: Halophyte Extracts as Natural Corrosion Inhibitors in Water Systems**

Stein, J. L., Chaturvedi, T., Skovhus, T. L. & Thomsen, M. H., 26 Aug 2022.

**Bioactive extracts from Salicornia ramosissima, Tripolium pannonicum and Crithmum maritimum as value-added products in halophyte-based biorefinery**

Hulkko, L. S. S., Chaturvedi, T., Custódio, L. & Thomsen, M. H., 1 Jun 2022.

**Purification and Isolation of Phenolic Compounds from the Extract of Salicornia Ramosissima**

Fredsgaard, M., Kohnen, S., Chaturvedi, T. & Thomsen, M. H., 12 May 2022.

**Extraction of bioactive phenolic and antioxidant compounds from lignified Salicornia ramosissima**

Fredsgaard, M., Chaturvedi, T. & Thomsen, M. H., 11 Apr 2022.

**Effect of Antimicrobial Halophilic Plant Extracts on Microbiologically Influenced Corrosion (MIC)**

Stein, J. L., Chaturvedi, T., Skovhus, T. L. & Thomsen, M. H., Mar 2022. 15 p.

**Extraction and Quantification of Chlorophylls, Carotenoids, Phenolic Compounds, and Vitamins from Halophyte Biomasses**

Hulkko, L. S. S., Chaturvedi, T. & Thomsen, M. H., 14 Jan 2022, In: Applied Sciences (Switzerland). 12, 2, 17 p., 840.

**Clean Biocide Project: Natural Corrosion Inhibitors Halophilic Plant Extracts for Biofilm Mitigation**

Stein, J. L., Chaturvedi, T., Skovhus, T. L. & Thomsen, M. H., 2021.

**Halophilic Plant Extracts for Prevention of Microbiologically Influenced Corrosion (MIC)**

Chaturvedi, T., Stein, J. L., Skovhus, T. L. & Thomsen, M. H., 2021, p. 20.

**Process simulation and techno-economic assessment of Salicornia sp. based jet fuel refinery through *Hermetia illucens* sugars-to-lipids conversion and HEFA route**

Fredsgaard, M., Hulkko, L. S. S., Chaturvedi, T. & Thomsen, M. H., 2021, In: Biomass & Bioenergy. 150, 106142.

**Salicornia Species: Current Status and Future Potential**

Chaturvedi, T., Christiansen, A. H. C., Gołębiewska, I. & Thomsen, M. H., 2021, *Future of Sustainable Agriculture in Saline Environments*. 22 p.

### **The Clean Biocide Project Halophilic plant extracts for prevention of microbiologically influenced corrosion (MIC)**

Stein, J. L., Chaturvedi, T., Thomsen, M. H. & Skovhus, T. L., 2021.

### **Developing process designs for biorefineries-definitions, categories, and unit operations**

Chaturvedi, T., Torres, A. I., Stephanopoulos, G., Thomsen, M. H. & Schmidt, J. E., Mar 2020, In: *Energies*. 13, 6, 1493.

### **Effect of Halophyte Extract on Sulphate reducing prokaryotes**

Chaturvedi, T. (Inventor), Thomsen, M. H. (Inventor) & Skovhus, T. (Inventor), 2020, (In preparation)

### **Low-Temperature Pretreatment of Lignocellulosic Biomass for Enhanced Biogas Production**

Casaretto, R., Agdal, E. B. L., Cayenne, A., Chaturvedi, T. & Holm-Nielsen, J. B., Nov 2019, In: *Chemical Engineering and Technology*. 42, 12, p. 2565-2573 9 p.

### **Bioethanol potential of raw and hydrothermally pretreated banana bulbs biomass in simultaneous saccharification and fermentation process with *Saccharomyces cerevisiae***

Awedem Wobiwo, F., Chaturvedi, T., Boda, M., Fokou, E., Emaga, T. H., Cybulska, I., Deleu, M., Gerin, P. A. & Thomsen, M. H., Sept 2019, In: *Biomass Conversion and Biorefinery*. 9, 3, p. 553-563 11 p.

### **Evaluation of marine *Synechococcus* for an algal biorefinery in arid regions**

Bochenski, T., Chaturvedi, T., Thomsen, M. H. & Schmidt, J. E., Jun 2019, In: *Energies*. 12, 12, 13 p., 2233.

### **Investigation of natural antimicrobial compounds for prevention of microbiologically influenced corrosion (MIC)**

Chaturvedi, T., Skovhus, T. & Thomsen, M. H., Jun 2019.

### **Fermentation of Municipal Solid Waste to Lactic Acid using *Lactobacillus Salivarius***

Chaturvedi, T., Bassan, A. & Thomsen, M. H., May 2019.

### **Lignocellulosic Thermochemical Pretreatment Processes**

Cybulska, I., Chaturvedi, T. & Thomsen, M. H., Apr 2019, *Biorefinery: Integrated Sustainable Processes for Biomass Conversion to Biomaterials, Biofuels, and Fertilizers*. Bastidas-Oyanedel, J.-R. & Schmidt, J. E. (eds.). Cham: Springer Publishing Company, p. 153-165 13 p.

### **Investigation of microbial souring mechanisms and test of natural antibiotics for MIC prevention**

Chaturvedi, T., Skovhus, T. L. & Thomsen, M. H., 5 Nov 2018.

### **Hydrothermal pretreatment: Process modeling and economic assessment within the framework of biorefinery processes**

Torres, A. I., Ashraf, M. T., Chaturvedi, T., Schmidt, J. E. & Stephanopoulos, G., 1 Jun 2017, *Hydrothermal Processing in Biorefineries: Production of Bioethanol and High Added-Value Compounds of Second and Third Generation Biomass*. Springer, p. 207-235 29 p.

### **Estimation of bioenergy potential for local biomass in the United Arab Emirates**

Ashraf, M. T., Fang, C., Bochenski, T., Cybulska, I., Allassali, A., Sowunmi, A., Farzanah, R., Brudecki, G. P., Chaturvedi, T., Haris, S., Schmidt, J. E. & Thomsen, M. H., 17 Jan 2016, In: *Emirates Journal of Food and Agriculture*. 28, 2, p. 99-106 8 p.

### **Exploring Opportunities for the Production of Chemicals from Municipal Solid Wastes within the Framework of a Biorefinery**

Bonk, F., Chaturvedi, T., Torres, A. I., Schmidt, J. E., Thomsen, M. H. & Stephanopoulos, G., 1 Jan 2015, In: *Computer Aided Chemical Engineering*. 37, p. 2123-2128 6 p.

### **Characterization of the chemical composition of the halophyte *salicornia bigelovii* under cultivation**

Cybulska, I., Chaturvedi, T., Allassali, A., Brudecki, G. P., Brown, J. J., Sgouridis, S. & Thomsen, M. H., 19 Jun 2014, In: *Energy and Fuels*. 28, 6, p. 3873-3883 11 p.

Chemical characterization and hydrothermal pretreatment of *Salicornia bigelovii* straw for enhanced enzymatic hydrolysis and bioethanol potential

Cybulska, I., Chaturvedi, T., Brudecki, G. P., Kádár, Z., Meyer, A. S., Baldwin, R. M. & Thomsen, M. H., 2014, In: *Bioresource Technology*. 153, p. 165-172 8 p.

#### **Halophytes for the production of liquid biofuels**

Brown, J. J., Cybulska, I., Chaturvedi, T. & Thomsen, M. H., 2014, *Sabkha Ecosystems: Volume IV: Cash Crop Halophyte and Biodiversity Conservation*. Dordrecht: Springer, p. 67-72 6 p. (Tasks for Vegetation Science, Vol. 47).

## **Activities**

#### **Halophyte-Based Green Biorefinery: Potential Biomass Feedstocks And Processing Routes**

Hulkko, L. S. S. (Speaker), Turcios, A. (Other), Chaturvedi, T. (Other), Papenbrock, J. (Other) & Thomsen, M. H. (Other)  
10 May 2022

#### **Climathon - Climate Hackathon**

Chaturvedi, T. (Organizer)  
25 Oct 2019

#### **Halophytes based aquaponic system for a biorefinery**

Chaturvedi, T. (Lecturer)  
23 Sept 2019 → 25 Sept 2019

#### **Saline plant molecular factory for production of pharmaceuticals, functional feed, and biofuels using biorefinery technologies**

Chaturvedi, T. (Lecturer)  
10 Sept 2019 → 13 Sept 2019

#### **Investigation of microbial souring mechanisms and testing natural antibiotics for prevention of microbiologically influenced corrosion (MIC)**

Chaturvedi, T. (Lecturer), Skovhus, T. L. (Lecturer) & Thomsen, M. H. (Lecturer)  
10 Jan 2019

## **Projects**

#### **Algae derived biomass for anti-fouling coatings**

Chaturvedi, T. (PI), Skovhus, T. (CoPI) & Thomsen, M. H. (PI)  
01/11/2018 → 31/01/2019

#### **FLEXI-GREEN FUELS: Flexible and resilient integrated biofuel processes for competitive production of green renewable jet and shipping fuels**

Thomsen, M. H. (CoPI), Chaturvedi, T. (Project Participant), Rudnyckij, S. (Project Participant), Kaniki, S. E. K. (Project Participant), Spedtsberg, E. M. L. (Project Participant), Nielsen, L. (Project Participant), Alonso, D. L. (Project Participant), Sørensen, J. L. (Project Participant) & Christensen, M. D. (Project Coordinator)  
European Commission  
01/01/2021 → 31/12/2023

#### **Halophilic Plant Extracts as Natural Corrosion Inhibitors and Biocides for Oil Field Application**

Thomsen, M. H. (PI), Chaturvedi, T. (Col), Skovhus, T. L. (Col), Stein, J. L. (Project Participant), Fredsgaard, M. (Project Participant) & Christensen, M. D. (Project Coordinator)  
The Danish Hydrocarbon Research and Technology Centre  
01/09/2020 → 31/08/2021

**INBIOM – The Innovation Network for Bio Resources**

Holm-Nielsen, J. B. (PI), Chaturvedi, T. (Project Participant), Agdal, E. B. L. (Project Participant), Thomsen, M. H. (Project Participant) & Miltersen, A. H. (Project Coordinator)

Uddannelses- og forskningsministeriet

01/12/2018 → 31/12/2020

**AQUACOMBINE: Integrated on-farm Aquaponics systems for co-production of fish, halophyte vegetables, bioactive compounds, and bioenergy**

Thomsen, M. H. (PI), Holmene, C. F. (Project Manager), Chaturvedi, T. (Col), Steensballe, A. (Project Participant), Fredsgaard, M. (Project Participant) & Hulkko, L. S. S. (Project Participant)

01/10/2019 → 31/12/2023

**AQUACOMBINE: Integrated on-farm Aquaponics systems for co-production of fish, halophyte vegetables, bioactive compounds, and bioenergy**

Thomsen, M. H. (PI), Chaturvedi, T. (Project Participant), Hulkko, L. S. S. (Project Participant), Fredsgaard, M. (Project Participant), Kaniki, S. E. K. (Project Participant), Christensen, M. D. (Project Coordinator), Holmene, C. F. (Project Manager) & Stensballe, A. (Project Participant)

European Commission

01/10/2019 → 31/12/2023

**Investigation of microbial souring mechanisms and testing natural antibiotics for prevention of microbiologically influenced corrosion (MIC)**

Chaturvedi, T. (PI), Skovhus, T. (CoPI) & Thomsen, M. H. (PI)

01/10/2018 → 31/12/2018

**Metabolic engineering of lipid pathways in an oleaginous yeast and optimization of fermentation parameters for enhanced lipid production from the organic fraction of municipal solid waste**

Nielsen, L. (PI), Thomsen, M. H. (Supervisor), Sørensen, J. L. (Supervisor) & Chaturvedi, T. (Supervisor)

01/08/2022 → 30/07/2027