

Peer-Reviewed Articles

1. **Løge, I. A.**, Anabaraonye, B., Roar, J. B., Klingaa, J. Walther, K., Fosbøl, L. P. "Scale attachment and detachment: The role of hydrodynamics and surface morphology", Chemical Engineering Journal, Volume 430, Part 2, 2022, 132583
2. **Løge, I. A.**, Neerup, R., and Fosbøl, L.P. "A New View on Scale." Paper presented at the SPE International Oilfield Scale Conference and Exhibition, Aberdeen, Scotland, UK, May 2022.
3. **Løge, I. A.**, Anabaraonye, B., Fosbøl, L. P. "Growth mechanisms of composite fouling: The impact of substrates on detachment processes", Chemical Engineering Journal, Volume 446, Part 4, 15 October 2022, 137008
4. Neerup, R., **Løge, I. A.**, et al., "A Call for Standards in the CO₂ Value Chain", Environ. Sci. Technol. 2022, 56, 24, 17502–17505
5. Neerup, R., **Løge, I. A.**, and Fosbøl, L.P., "FeCO₃ Synthesis Pathways: The Influence of Temperature, Duration, and Pressure", ACS Omega 2023, 2023, 8, 3, 3404–3414
6. **Løge, I. A.**, Anabaraonye, B., N., Bovet, Fosbøl, L. P., "Crystal Nucleation and Growth: Supersaturation and Crystal Resilience Determine Stickability", Cryst. Growth Des. 2023, 23, 4, 2619–2627
7. Neerup, R., **Løge, I. A.**, Kontogeorgis, G. M., Thomsen, K., Fosbøl, P. L., "Measurements and modelling of FeCO₃ solubility in water relevant to corrosion and CO₂ mineralization", Chemical Engineering Science, Volume 270, 15 April 2023, 118549
8. **Løge, I. A.**, Rasmussen, P. W., Sørensen, H. O., Bruns, S., AlBaraghtheh, T., Christensen, A. N., Dahl, A. B., Fosbøl, P. L., "Revealing the complex spatiotemporal nature of crystal growth in a steel pipe: Initiation, expansion, and densification", Chemical Engineering Journal, Volume 466, 15 June 2023, 143157
9. **Løge, I. A.**, Anabaraonye, B., and Fosbøl, L. P. "Characterizing the Effect of Scale Inhibitors on Surfaces" Paper presented at the SPE International Conference on Oilfield Chemistry, Houston, USA, June 2023.
10. **Løge, I. A.**, Dragani, T., Anabaraonye, B., "Decoupling inhibitor mechanisms in surface and bulk processes: studies of BaSO₄", Cryst. Growth Des. 2. 23, 12, p. 8518–8526
11. Neerup, R., Rudbeck, C. G., **Løge, I. A.**, Kontogeorgis, G. M., Thomsen, K., Fosbøl, P. L., "Solubility of FeCO₃ in aqueous NaCl, and aqueous HCl", Chemical Engineering Science, Volume 285, 15 p., 119605.
12. Neerup, R., Rudbeck, C. G., **Løge, I. A.**, Kontogeorgis, G. M., Fosbøl, P. L., "Experimental solubility of FeCO₃ in aqueous 3-20 wt% KCl at 25-80°C", Fluid Phase Equilibria, Volume 582, July 2024, 114105.
13. Jensen, S., **Løge, I. A.**, Bendix, J. & Diekhöner, L. An approach for patterned molecular adsorption on ferromagnets, achieved via Moiré superstructures. Phys. Chem. Chem. Phys. (2024), 26, 13710-13718
14. **Løge, I. A.**, and Anabaraonye, B., "The importance of detachment processes in modeling crystallization fouling", Chemical Engineering Journal, Volume 497, 1 October 2024, 154642.
15. **Løge, I. A.**, Demir, C., Vinjarapu, S. H. B., Neerup, R., Hauge, E., Jørsboe, J. K., Dimitriadi, M., Halilov, H., Frøstrup, C. F., Gyorbíro, I., Kottaki, N., Jayan, A. N., Jensen, S., Karlsson, J. L., Fosbøl, P., "Pilot-Scale CO₂ Capture in a Cement Plant with CESAR1: Comparative Analysis of Specific Reboiler Duty Across Advanced Process Configurations", Chemical Engineering Journal, 506, 159429, 2025
16. Jensen, E. H., Pedersen, R. C., **Løge, I. A.**, Dlamini, G. M., Neerup, R., Riber, C., Elmegaard, B., Jensen, J. K., Fosbøl, P. L., "The Cost of Impurities: A Techno-Economic Assessment on Conditioning of Captured CO₂ to Commercial Specifications", International Journal of Greenhouse Gas Control, 141, 104309, 2025,
17. Pedersen, R. C., Jensen, E. H. **Løge, I. A.**, Elmegaard, B., Jensen, J. K., "The effect of impurities in captured CO₂ on the distribution of liquefaction and purification costs", Accepted. Energy Conversion and Management, 336, 119839.
18. Jørsboe, J. K., Hauge, E., Jensen, S., Wiers, P., Karlsson, J., **Løge, I. A.**, Abildskov, J., Fosbøl, P. L., "Biogas upgrading with PZ/MDEA: Pilot demonstration of absorber intercooling, cold solvent split and lean vapor compression", Fuel, 396, 15, 135296, 2025.
19. Neerup, R., Øbro, K. L., **Løge, I. A.**, Kottaki, N., Frøstrup, C. F., Gyorbíro, I., Munk, S. H., Bountzis, P., Halilov, H., Jensen, S., Karlsson, J., Fosbøl, P. L., "CO₂ Capture Pilot Campaign at Aalborg Portland: Understanding Solvent Degradation of CESAR1 in Cement Plant Operations", Chemical Engineering Journal, 510, 161542, 2025

20. M. Dimitriadi, **I. A. Løge**, R. Neerup, S. Jensen, J. L. Karlsson, L. P. Brorholt, F. Bræstrup, H. Halilov, S. N. B. Villadsen, J. Abildskov, P. L. Fosbøl, Pilot-scale CO₂ capture in a cement plant with CESAR1: Emission control with acid wash and absorber intercooling, Submitted.
21. Demir, C., **Løge, I. A.**, Jørsboe, J. K., Abildskov, J., Friis, R. J., Fosbøl, P. L., "New pilot data and rate-based Aspen Plus simulations for CO₂ capture with MDEA/PZ in biogas upgrading", Submitted.
22. Jensen, E. H., Rahbek, P. V., Jensen, S., Kappel, J., Jørsboe, J. K., **Løge, I. A.**, Nedenskov, J., Riber, C., Elmegaard, B., Fosbøl, P. L., "Demonstration-scale CO₂ capture and liquefaction at the Amager Bakke waste-to-energy facility with monoethanolamine: Efficiency, CO₂ purity, and emission control", Submitted.
23. Jensen, E. H., Rahbek, P. V., Jensen, S., Kappel, J., Jørsboe, J. K., **Løge, I. A.**, Nedenskov, J., Riber, C., Elmegaard, B., Fosbøl, P. L., "Towards net-zero energy penalty: District heating recovery and optimization in a CO₂ capture unit in demonstration-scale", Submitted.
24. **Løge, I. A.**, Demir, C., Vinjarapu, S. H. B., Neerup, R., Hauge, E., Jørsboe, J. K., Dimitriadi, M., Buvik, V., Halilov, H., Frøstrup, C. F., Gyorbíro, I., Kottaki, N., Jayan, A. N., Jensen, S., Karlsson, J. L., Fosbøl, P., "Pilot-Scale CO₂ capture in a cement plant with CESAR1: Higher stripper pressure reduces energy demand and compression work but increases solvent degradation", Chemical Engineering Journal, 163900, 2025
25. **Løge, I. A.**, Demir, C., Vinjarapu, S. H. B., Neerup, R., Hauge, E., Jørsboe, J. K., Dimitriadi, M., Buvik, V., Halilov, H., Frøstrup, C. F., Gyorbíro, I., Kottaki, N., Jayan, A. N., Jensen, S., Karlsson, J. L., Fosbøl, P., "Pilot-Scale CO₂ Capture in a Cement Plant with CESAR1: Leveraging Absorber Intercooling and Cold-Feed Heat-Integration to lower the SRD", Submitted

Popular Science accounts

1. **Appelquist, I. L.**, Anabaraonye, B., Fosbøl, L. P., 2022, Befæstet af begroning, Dansk Kemi, 103, p. 24-26
2. **Appelquist, I. L.**, Rettidig rengøring af varmevekslere reducerer energiforbruget markant, DTU.dk, Online
3. **Appelquist, I. L.**, Rasmussen, P. W., Sørensen, H. O., Christensen, A. N., Dahl, A. B., Fosbøl, P. L., 2022, Træt af at afkalke din elkedel? Tilkalkede rør er et større problem, end du tror, Videnskab.dk, Online
4. **Appelquist, I. L.**, Anabaraonye, B., 2023, Predicting fouling: A brief introduction, Heat Exchanger World, 5, p. 52-53
5. **Appelquist, I. L.**, Anabaraonye, B., 2023, Predicting fouling: Surface effects, Heat Exchanger World, 5, p. 39-40
6. **Appelquist, I. L.**, Anabaraonye, B., 2023, Predicting fouling: Unexpected behavior from flow, Heat Exchanger World, 5, p. 28-29
7. **Appelquist, I. L.**, Neerup, R., Fosbøl, L. P., 2023, Hvad gør vi med den CO₂, vi fanger?, Videnskab.dk, Online
8. **Appelquist, I. L.**, 2024, Experience Exchange: Understanding fouling, Heat Exchanger World, 6, p. 50, Online
9. **Appelquist, I. L.**, Jensen, S., Bendix, J., Dieköner, L., 2024, Skabeloner til Fremtidens Elektronik, Dansk Kemi, No. 5,
10. **Appelquist, I. L.**, Voices from Heat Exchanger Fouling and Cleaning 2024: Innovations and Networking, Heat Exchanger World, 6. p. 50-51
11. **Appelquist, I. L.**, Anabaraonye, B., 2025, Bliv Fri for begroning: Del 1, Dansk Kemi, Vol 106, No. 1
12. **Appelquist, I. L.**, Anabaraonye, B., 2025, Bliv Fri for begroning: Del 2, Dansk Kemi, Vol 107, No. 2
13. Jensen, E. H., Pedersen, R. C., **Appelquist, I. L.**, Dlamini, G. M., Neerup, R., Riber, C., Elmegaard, B., Jensen, J. K., Fosbøl, P. L., Prisen på grisen - Hvad koster oprensning af beskidt CO₂, Dansk Kemi, Vol 107, No. 2

Conference contributions

1. *Neerup, R., ***Appelquist, I. L.**, Fosbøl, L. P., FeCO₃ scaling, AT-CERE discussion meeting 2020, Online. (Oral presentation).
2. ***Appelquist, I. L.**, Anabaraonye, B., Roar, J. B., Klingaa, C. G., Thomsen, K., Fosbøl, L. P., Influence of Hydrodynamics on BaSO₄ Scale Deposition Kinetics on Steel Surfaces, AIChE 2020, online (Oral presentation)
3. *Neerup, R., **Appelquist, I. L.**, Figueroa, C. M., Thomsen, K., Fosbøl, L. P., Thermodynamic Modelling of FeCO₃ Solubility Using the Extended Uniquac Model, AIChE 2020, online (Oral presentation)
4. *Neerup, R., **Appelquist, I. L.**, Rudbeck, C. G., Fosbøl, L. P., CO₂ IMPACT ON FE₂O₃ CORROSION PRODUCT, TCCS 2021, Online (Oral presentation)
5. *Neerup, R., Figueroa, C. M., **Appelquist, I. L.**, Fosbøl, L. P., FeCO₃ mineralisation and solubility - a guiding factor CO₂ corrosion and storage, GHGT 2021, Online (Oral presentation).
6. **Appelquist, I. L.**, Neerup, R., Fosbøl, L. P., SYNTHESIS PROPERTIES OF FE₂O₃: UNDERSTANDING THE UNDERGROUND REACTIVE ROCK, TCCS 2021, Online (Poster presentation)
7. Neerup, R., ***Appelquist, I. L.**, Fosbøl, L. P., Thermal properties of a CO₂ sorbent and its possible degradation pathways, Goldschmidt 2021, Online (Oral presentation).
8. ***Appelquist, I. L.**, Neerup, R., Fosbøl, L. P., Grain and crystalline domain properties of a potential CO₂ storage unit, Goldschmidt 2021, Online (Oral presentation).
9. ***Appelquist, I. L.**, Fosbøl, L. P., Neerup, R., Tracking the temporal evolution of Ostwald ripening in CaCO₃ crystals, related to phenomena observed under CO₂ storage, Goldschmidt 2021, Online (Oral presentation).
10. ***Appelquist, I. L.**, Fosbøl, L. P., Basics of scaling formation, AT-CERE discussion meeting 2021, Kgs. Lyngby, Denmark (Oral presentation).
11. ***Appelquist, I. L.**, Klingaa, C. G., Cabello, J., Craig, M., Neerup, R., Fosbøl, L. P., The Temperature Dependence of BaSO₄ Surface Precipitation Kinetics, AIChE 2021, Online (Oral presentation)
12. **Appelquist, I. L.**, Neerup, R., Roar, J. B., Corrêa, L. F. F., Hao, J., Almeida, S., Shi, M., Anabaraonye, B., Scale formation studies: A multidisciplinary approach, DHRTC technology conference, 2021, poster
13. **Appelquist, I. L.**, Roar, J. B., Anabaraonye, B., "Basics of scaling formation", DHRTC technology conference, 2021, poster
14. ***Appelquist, I. L.**, Neerup, R., Fosbøl, L. P., "A new View on Scale", SPE International Oilfield Scale Conference and Exhibition 2022, (Oral+Poster presentation).
15. Vinjarapu, *S. H., Neerup, et al., "Pilot-Scale Post Combustion Co₂ Capture at Amager Ressourcecenter (Arc) Denmark: Challenges and Experiences", GHGT-16, 2022 (Poster presentation).
16. Neerup, R., Stampino, S. I., et al., "Solid-Liquid Phase Boundaries in the System: Glycine-NaOH-NaHCO₃-H₂O", GHGT-16, 2022 (Poster presentation).
17. Jørsboe, J. K., Vinjarapu, S. H., et al., "Monitoring and mitigation of foaming in amine-based CO₂ capture processes", GHGT-16, 2022 (Poster presentation).
18. ***Appelquist, I. L.**, P. W. Rasmussen I. L., Neerup, R., Fosbøl, L. P., In-situ measurements of mineral precipitation by means of CT-Scanning, GHGT-16, 2022 (Poster presentation).
19. **Appelquist, I. L.**, Rasmussen, P. W., Osholm, H. S., Nymark, A. Christensen, Dahl, A. B., Fosbøl, L. P., Insight to crystallization fouling from 4D X-ray CT: A three step process?, AIChE 2022, online (Poster presentation)
20. **Appelquist, I. L.**, *Anabaraonye, B., Fosbøl, L. P., "The saturation dependence of BaSO₄ surface precipitation kinetics", AIChE 2022, online (Poster presentation)
21. **Appelquist, I. L.**, *Anabaraonye, B., Fosbøl, L. P., "Surface Investigation of Scale Inhibitors (SISI)", AGU 2022, online (Poster presentation)
22. **Appelquist, I. L.**, *Anabaraonye, Fosbøl, L. P., "The sticking factor: A guide to crystal morphology?", AGU 2022, online (Poster presentation)

23. ***Appelquist, I. L.**, Anabaraonye, B., "A Review of Detachment Processes in Scaling: Implications for Accurate Predictions", Danish Offshore Technology
24. **Appelquist, I. L.**, *Anabaraonye, B., "Characterizing the Effect of Scale Inhibitors on Surfaces", SPE International Conference on Oilfield Chemistry, Houston, USA, June 2023 (Oral presentation)
25. ***Appelquist, I. L.**, Anabaraonye, B., "What makes inorganic scale stick", Production Chemistry Symposium, Geilo, Norway March 2024 (Oral presentation+proceedings)
26. **Appelquist, I. L.**, *Vazquez, O., "Characterization of Phosphonate Scale Inhibitors Retention using a Mini Core-flood", Geilo, Norway March 2024 (Oral presentation+proceedings)
27. Bache, M., **Appelquist, I. L.**, "CAN SOUND STOP SCALING: A NIR SPECTROSCOPY STUDY OF ULTRA-SOUND TREATED WATER" Heat Exchanger Fouling and Cleaning, Lisbon, April 2024 (Poster + proceedings)
28. ***Appelquist, I. L.**, Anabaraonye, B., "REVIEWING DETACHMENT PROCESSES IN CRYSTALLISATION FOULING: IMPLICATIONS FOR ACCURATE PREDICTIONS" Heat Exchanger Fouling and Cleaning, Lisbon, April 2024 (Oral presentation + proceedings)
29. ***Appelquist, I. L.**, Anabaraonye, B., "EVALUATING CHEMICAL INHIBITORS FOR CRYSTALLISATION FOULING MITIGATION: BULK VS. SURFACE DYNAMICS" Heat Exchanger Fouling and Cleaning, Lisbon, April 2024 (Poster + proceedings)
30. ***Appelquist, I. L.**, Anabaraonye, B., "Scale resilience: In search of comprehensive models", SPE International Conference on Oilfield Scale, Aberdeen, Scotland, June 2024 (Invited oral presentation)
31. **Appelquist, I. L.**, *Vazquez, O., "Decoupling Phosphonate Scale Inhibitors Adsorption and Precipitation Mechanism", SPE International Conference on Oilfield Scale, Aberdeen, Scotland, June 2024 (Poster presentation)
32. *Neerup, R., Rudbeck, C. G., **Appelquist, I. L.**, Konyogorgis, G. M., Fosbøl, L. P., CO₂ corrosion: understanding the solubility of FeCO₃, GHGT, Calgary Canada, 20th-24th October 2024, (Poster presentation).
33. **Appelquist, I. L.**, Demir, C., Vinjarapu, S. H. B., Neerup, R., Dimitriadi, M., Halilov, H., Fritzner, C., Jensen, S., Karlsson, J. L., Fosbøl, L. P., Results of 8 months of CO₂ capture at a cement plant, GHGT, Calgary Canada, 20th-24th October 2024, (Oral presentation).
34. Dimitriadi, M., **Appelquist, I. L.**, Jørsboe, J. K., Neerup, R., Halilov, H., Fritzner, C., Jensen, S., Karlsson, J. L., Villadsen, S. N. B., Abildskov, J., Fosbøl, L. P., Pilot demonstration of intercooling and vacuum operated stripper in a mobile carbon capture unit using piperazine promoted AMP for CO₂ utilization, GHGT, Calgary Canada, 20th-24th October 2024, (Oral presentation).
35. Demir, C., **Appelquist, I. L.**, Jørsboe, J. K., Fosbøl, L. P., Verification of a Rate-Based Model for CO₂ Capture: Integration of Mixed PZ and MDEA in Aspen Plus, GHGT, Calgary Canada, 20th-24th October 2024, (Oral presentation).
36. Jensen, E. H., Pedersen, R. C., **Løge, I. A.**, Dlamini, G. M., Neerup, R., Riber, C., Elmegaard, B., Jensen, J. K., Fosbøl, P. L., "How Do Impurities Impact CO₂ Conditioning Costs?", The 13th Trondheim CCS Conference, 17 - 19 June 2025, Oral.
37. **Løge, I. A.**, Demir, C., Vinjarapu, S. H. B., Neerup, R., Jensen, E. H., Jørsboe, J. K., Dimitriadi, M., Halilov, H., Frøstrup, C. F., Gyorbíro, I., Kottaki, N., Jensen, S., Karlsson, J. L., Fosbøl, P. L., "How does stripper cold solvent feed and absorber intercooling affect thermal energy flow? A pilot-scale study on CESAR1 in cement flue gas capture", The 13th Trondheim CCS Conference, 17 - 19 June 2025, Poster.
38. **Løge, I. A.**, Demir, C., Vinjarapu, S. H. B., Neerup, R., Jensen, E. H., Jørsboe, J. K., Dimitriadi, M., Halilov, H., Frøstrup, C. F., Gyorbíro, I., Kottaki, N., Jensen, S., Karlsson, J. L., Fosbøl, P. L., "How does the pressure in the stripper column affect carbon capture? A pilot scale study in CESAR1 and cleaning cement flue gas", The 13th Trondheim CCS Conference, 17 - 19 June 2025, Poster.
39. **Løge, I. A.**, Neerup, R., Bountzis, P., Kottaki, N., Jensen, S., Karlsson, J. L., Krum, K., Christensen, S., Fosbøl, P. L., "5 months of pilot-scale CO₂ capture from a biomass fired power plant: Energy reductions through advanced process configurations", The 13th Trondheim CCS Conference, 17 - 19 June 2025, Oral.
40. Dimitriadi, M.*, **Løge, I. A.**, Andersen, C., Neerup, R., Bræstrup, F., Jensen, S., Karlsson, J. L., Villadsen, S. N. B., Abildskov, J., Fosbøl, P. L., "Influence of advanced process configurations on amine emissions in post-combustion capture using AMP/PZ", The 13th Trondheim CCS Conference, 17 - 19 June 2025, Oral.

41. Nilsson, G., Neerup, R., Øbro, K., **Løge, I. A.**, Kottaki, N., Bountzis, P., Jensen, S., Karlsson, J. L., Krum, K., Christensen, S., Fosbøl, P. L., "Comparative Analysis of CESAR1 Solvent Degradation in Industrial CO₂ Capture: Insights from Cement and Biomass Power Plants", The 13th Trondheim CCS Conference, 17 - 19 June 2025, Poster.
42. Demir, C., **Løge, I. A.**, Abildskov, J., Vinjarapu, S. H. B., Neerup, R., Jørsboe, J. K., Dimitriadi, M., Halilov, H., Frøstrup, C. F., Gyorbíro, I., Kottaki, N., Jensen, S., Karlsson, J. L., Fosbøl, P. L., "Enhancing Reliability in Pilot Scale CO₂ Capture: Steady State Data Reconciliation Sets The New Standard", The 13th Trondheim CCS Conference, 17 - 19 June 2025, Oral.
43. Demir, C., Neerup, R., **Løge, I. A.**, Abildskov, J., Fosbøl, P. L., "Modeling and mitigation of precipitation in PZ-based CO₂ capture solvents", IEAGHG 8th Post Combustion Capture Conference, 16th to 18th September 2025 Marseille, France.

* - presenting author

Grants

Projects

1. April 2024-Mar. 2025: *The Origin of a Nucleus: Understanding Surface Activation Energy (1.120 kDKK) - Principal Investigator*
2. Nov. 2023-Dec. 2024: *Characterization of Phosphonate Scale Inhibitors Retention using a Mini-Coreflood (14 kDKK) - Principal Investigator*
3. Sep. 2023 – Sep. 2024: *ChalkGus (1000 kDKK) – Co-Principal Investigator*
4. April 2023 – December 2023: *The Resilience of Scale (338 kDKK) – Principal Investigator*
5. Oct. 2022 – March 2023: *Surface Investigation of Scale Inhibitors (SISI) (198 kDKK) – Principal Investigator*
6. Feb. 2021 – July 2021: *Novel tool for surface characterisation of pipelines (177 kDKK) – Principal Investigator*

Travel grants

1. William Demant for GHGT-16
2. SPE CPH for SPE scale conference 2022
3. Otto Mønsted for SPE scale conference 2022
4. Otto Mønsted for Heat Exchanger Fouling and Cleaning 2024
5. EuroTech Visiting Researcher Programme to TU/e in Eindhoven 2025
6. North2North Mobility program 2025, exchange with UiA
7. Knud Højgaard Fond, Travel to TCCS, 16–19 June 2025
8. Nordic Energy Research, Individual Mobility Support 2025

Awards

1. Apr. 2024: "Best Poster Award" at Heat Exchanger Fouling and Cleaning conference 2024
2. Nov. 2023: "Young Researcher Award" at DTU
3. Sep. 2023: Finalist in Young Researcher Category, IChemE Global Awards
4. Oct. 2021: A.N. Neergaard fond: Modelsystem til undersøgelse af krystallisationsprocesser under CO₂ lagring (30 kDKK)
5. Sep. 2021: Best poster award at YRD DHRTC