

Christian Brackmann
Combustion Physics
LTH Profile Area: The Energy Transition
LTH Profile Area: Photon Science and Technology
LU Profile Area: Light and Materials
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Research

My research mainly deals with experimental studies of gas-phase processes, such as combustion, using laser-based methods for diagnostics. In later years, this research has, in particular, included issues related to the combustion of biomass fuels, such as fuel-nitrogen conversion or release of alkali compounds. Laser-based methods for measuring quantitative species concentrations are primary tools in these investigations, carried out in close collaboration with expertise in chemical modeling. In this research, we also consider the utilization of biomass from a holistic perspective, e.g. by using the porous biochar produced in pyrolysis/gasification as material in technical applications. The laser-based methods are generally very useful for studies of reactive flows and have also been employed in studies of thermal processes in batteries.

In addition to research in combustion diagnostics, I also have five years of experience in the development and application of advanced microscopy techniques based on short-pulse lasers and non-linear optical processes. This was acquired as a researcher at Chalmers University of Technology.

Employment

Senior lecturer

Combustion Physics
Lund University
Lund, Sweden
2016 Jan 20 → present

Profile area member

LTH Profile Area: The Energy Transition
Lund University
Sweden
2022 Jul 6 → present

Profile area member

LTH Profile Area: Photon Science and Technology
Lund University
Sweden
2022 Sept 13 → present

Profile area member

LU Profile Area: Light and Materials
Lund University
Sweden
2023 Jan 1 → present

Researcher - Project leader

Chalmers University of Technology

Gothenburg, Sweden
2007 Jun 1 → 2010 Dec 31

Post Doc

Chalmers University of Technology
Gothenburg, Sweden
2005 Jun 1 → 2007 May 31

Research Engineer

Lund University
Lund, Sweden
2004 Nov 1 → 2005 May 31

PhD student

Lund University
Lund, Sweden
1998 May 1 → 2004 Oct 31

Projects

Chemical quenchers for inhibition of battery fires

Brackmann, C. (Researcher) & Nilsson, E. J. K. (PI)
Swedish Electromobility Centre
2021/04/01 → 2022/12/31

MINICOR: MILD Combustion with Nitrogen and Carbon Dioxide Reforming

Jiang, X. (Research student), Brackmann, C. (Project coordinator), Fatehi, H. (Researcher), Möller, S.-I. (Administrator), Ossler, F. (Researcher) & Garcia Gonzalez, N. (Researcher)
2023/11/01 → 2028/10/31

MINICOR: MILD Combustion with Nitrogen and Carbon Dioxide Reforming

Brackmann, C. (Researcher), Fatehi, H. (Researcher), Möller, S.-I. (Administrator), Ossler, F. (Researcher) & Garcia Gonzalez, N. (Researcher)
European Commission - Horizon Europe
2023/11/01 → 2028/10/31

MYTHOS - Horizon Europe (Medium-range hybrid low-pollution flexi-fuel/hydrogen sustainable engine)

Gupta, P. (Research student), Richter, M. (Supervisor), Brackmann, C. (Assistant supervisor), Subash, A. A. (Assistant supervisor) & Sanned, D. (Assistant supervisor)

COCALD: Towards CO₂ neutral energy conversion using advanced laser diagnostics and modelling

Brackmann, C. (Researcher), Konnov, A. (Researcher), Aldén, M. (PI), Bai, X.-S. (Researcher), Nilsson, E. J. K. (Researcher), Li, Z. (Researcher), Fatehi, H. (Researcher) & Bood, J. (Researcher)
Knut and Alice Wallenberg Foundation
2020/07/01 → 2025/06/30

Research Grants

Online-mätning med FTIR anpassad till förgasning

Brackmann, C.
Göteborg Energis Forskningsstiftelse
Tilldelningsdatum: 2014/05/16
630 000,00 SEK

Raman spektroskopi för karakterisering av porösa kolbaserade material

Brackmann, C.
Kungliga Fysiografiska Sällskapet i Lund

Tilldelningsdatum: 2018/11/14
100 000,00 SEK

Utvidgning av Raman spektroskopi för gas analys in situ

Brackmann, C.
Stiftelsen för Strategisk Forskning, SSF
Tilldelningsdatum: 2018/10/10
4 066 000,00 SEK

MILD Combustion with Nitrogen and Carbon Dioxide Reforming - MINICOR

Brackmann, C. (koordinator)
European Innovation Council (EIC)
Tilldelningsdatum: 2023/06/14
24 111 000,00 SEK

Supervision

Main supervisor: Alsu Zubairova, Lund University, expected PhD defense 2025.
Haisol Kim, Lund University, PhD degree 2022.
Torsten Methling, Lund University, post doc. 2018-19.

Assistant supervisor: Madeleine Åkeson, Chalmers University of Technology, Degree of Licentiate of Engineering, 2009.
Tomas Leffler, Lund University, PhD degree 2016. Johan Simonsson, Lund University, PhD degree 2018. Wubin Weng, Lund University, PhD degree 2020. Gianluca Capriolo, Lund University, PhD defense 2020. Mohit Pushp, University of Gothenburg/Royal Institute of Technology, PhD degree 2022. Meng Li, Lund University, expected PhD defense 2024. Aravind Sridhara, Lund University, expected PhD defense 2026. Megha Prakash, Lund University, expected PhD defense 2027. Jeffrey John, Lund University, expected PhD defense 2027.

Commissions of trust

- Reviewer scientific journals: Optics Letters, Optics Express, Journal of Biomedical Optics, Journal of Photochemistry and Photobiology, Colloids and Surfaces, Combustion and Flame, Proceedings of the Combustion Institute.
- Opponent on Thesis for Degree of Licentiate of Engineering, M. Sc. Stina Gullbrand, University of Gothenburg, 2010.
- Member of grading committee at PhD dissertations.
- Member of the board of the Scandinavian Nordic section of the Combustion Institute 2019-.
- Responsible for public procurement (~4500000 SEK) of ultrafast femtosecond laser equipment for a new diagnostic facility at the Division of Combustion Physics, 2014.
- Department contact person for PhD studies at the Division of Combustion Physics, Lund University, 2013-2020.
- Member of the research network microCARS management committee within the European Cooperation in Science and Technology (COST), 2007-2011.