

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**

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 CO<sub>2</sub> 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.  
Göteborgs 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.