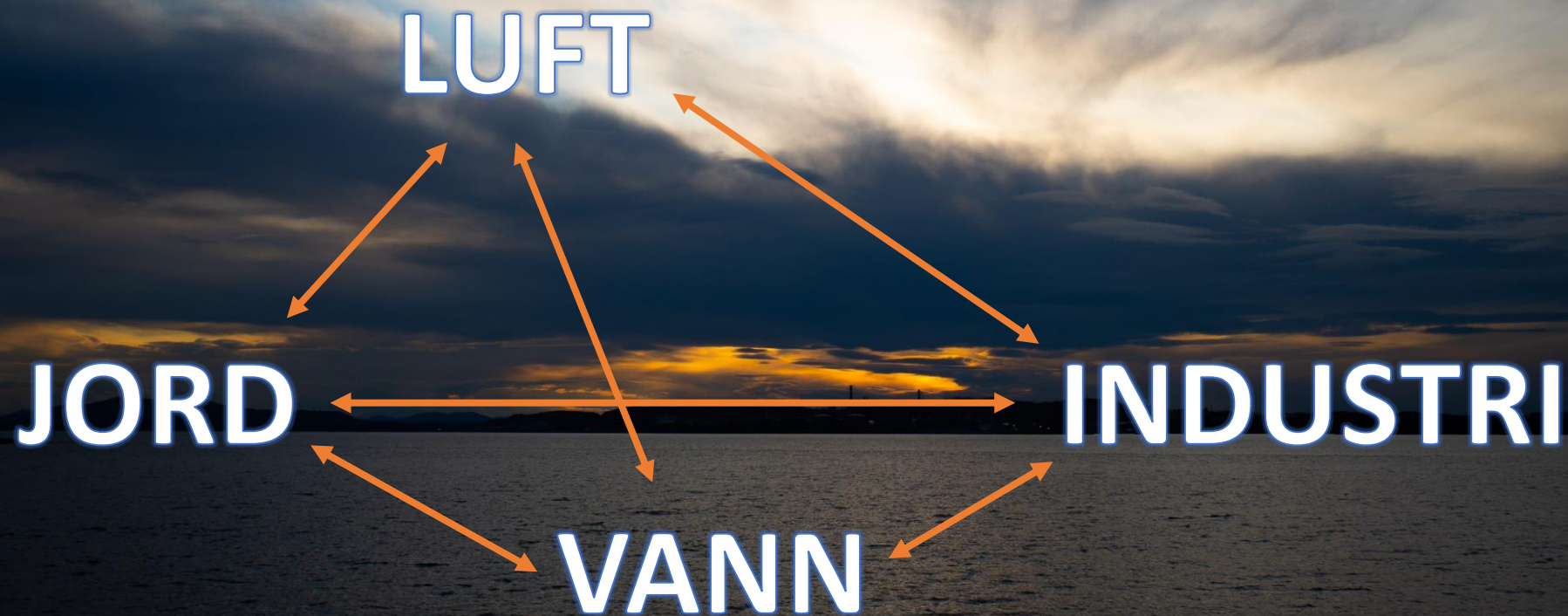
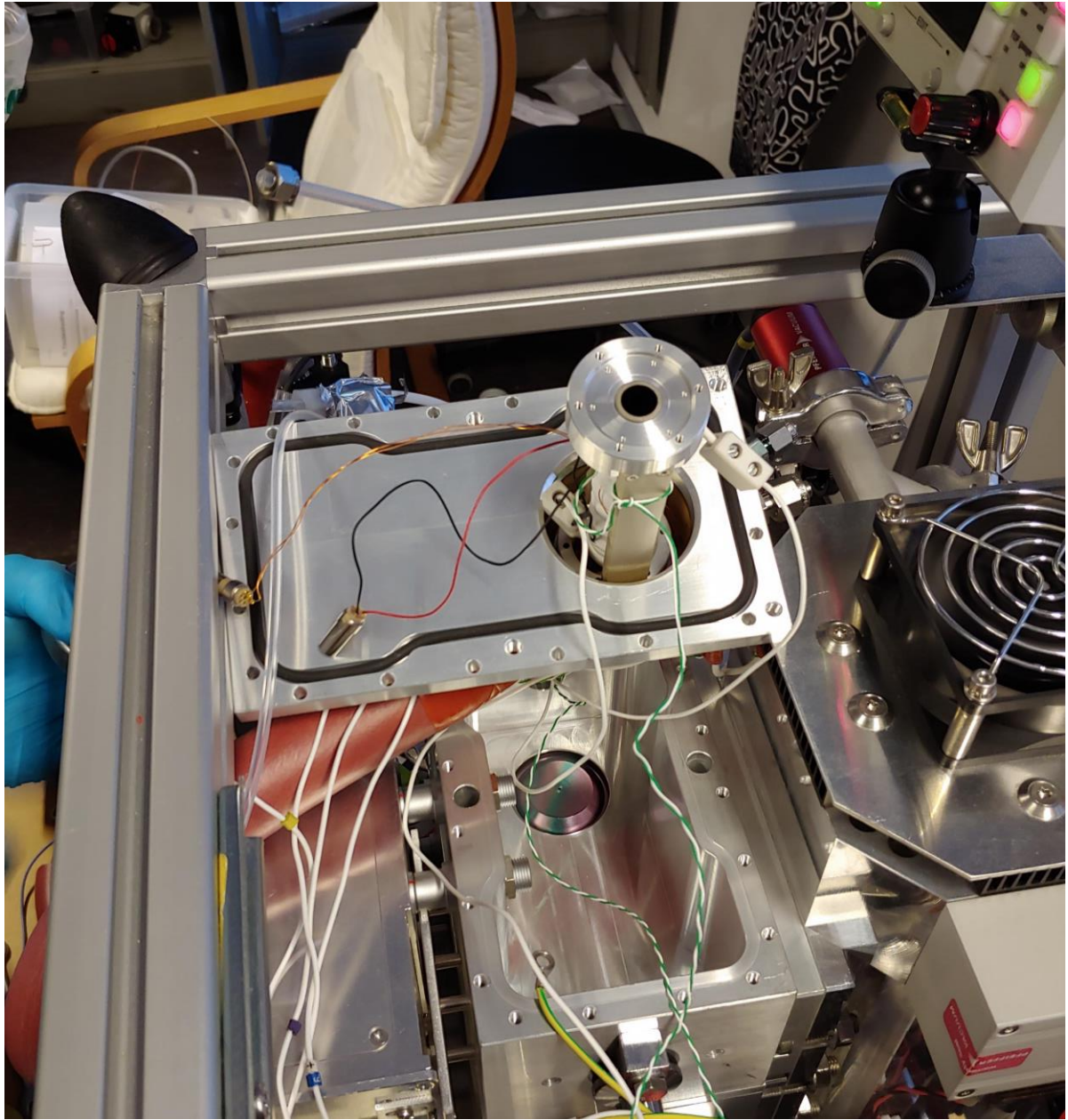
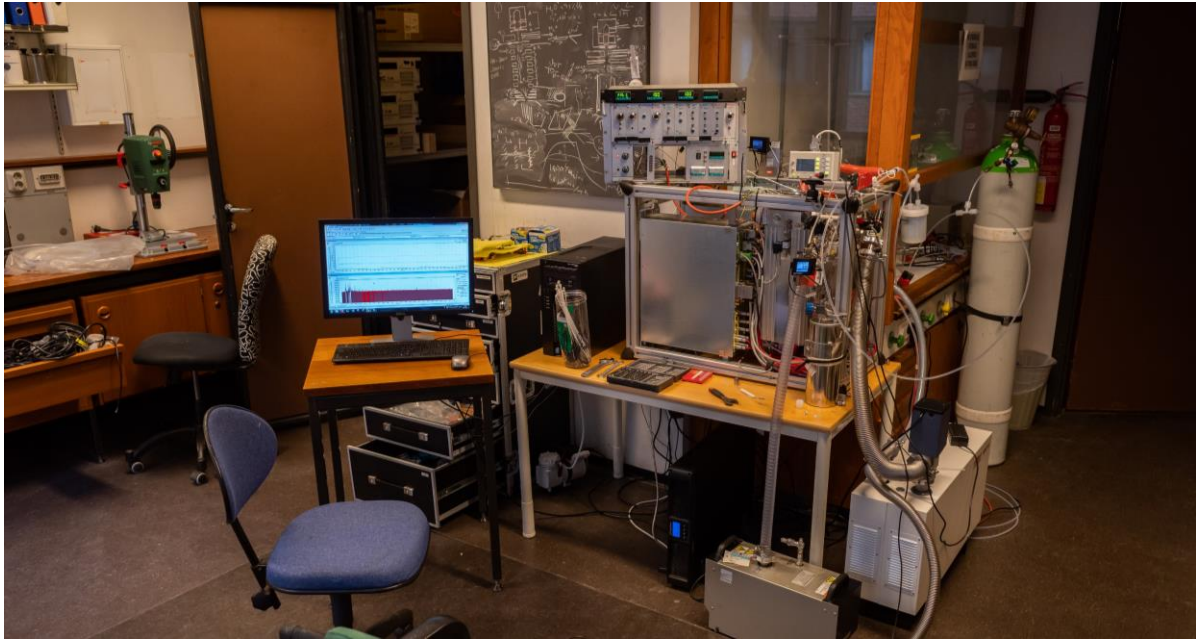


# Forskningsgruppe for Atmosfærekjemi





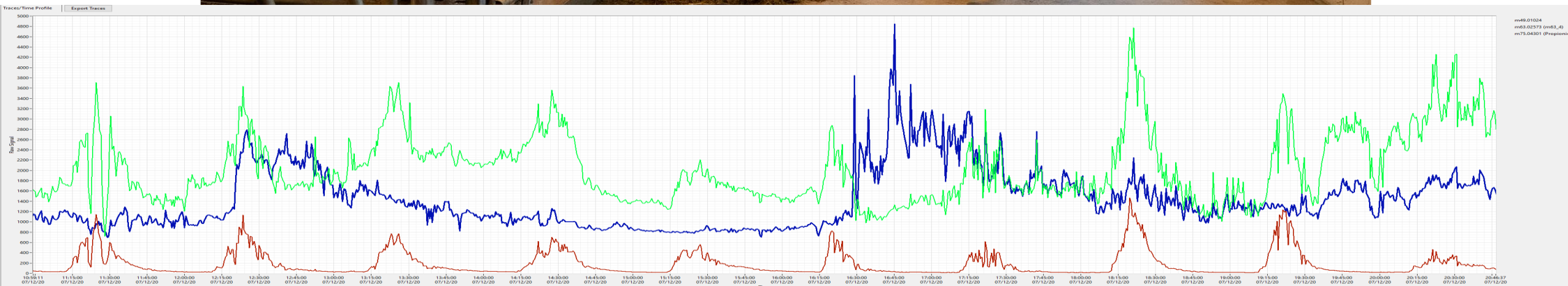




Norske forskere fant giftgasser fra svensk søppelbrann (forskning.no)





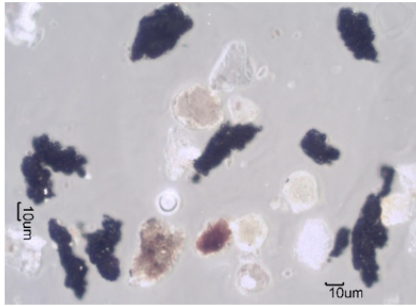




# Masteroppgaver

*Prosjektene beskrevet her er forslag basert på hva som er klappet og klart, men vi er fleksible om du har andre ideer 😊*

## Plastic particles in the air



Plastic pollution is on everyone's mind, but usually one thinks of plastic particles in water. There is, however, increasing evidence that plastic micro- and nanoparticles are transported via the atmosphere. The amount of airborne plastic micro- and nanoparticles is currently unknown, because no chemical-analytical instruments are available for measuring such small-sized particles in air. In your Master project, you will participate in the development and characterization of a method for measuring airborne plastic micro- and nanoparticles. The method involves

particle collection onto a substrate, particle vaporization and on-line mass spectrometric analysis of the emitted vapors. You will then carry out the first tentative measurements of plastic micro- and nanoparticles in the atmosphere of Oslo.

## Orbitrap mass spectrometry



Mass spectrometers are high-tech instruments that are widely used in analytical and bioanalytical chemistry. The Group of Atmospheric Chemistry has recently purchased an Orbitrap Fusion mass analyzer to be used for advanced environmental sample analysis. In your Master project, you will explore the use of this new instrument for online analysis of organic pollutants in the atmosphere. You will work together with a post-doctoral

researcher to develop, characterize and optimize an inlet system/ion source, calibrate the instrument, and develop selective detection schemes via MS/MS and ultra-high mass resolution analysis.

## Indoor air pollution from cooking



**HEALTHY ENERGY-EFFICIENT  
URBAN HOME VENTILATION**

Humans are continuously exposed to gases and particle in the environment, which negatively affects their health. Most of the exposure occurs indoors and peak exposures are typically caused by cooking activities. An efficient kitchen ventilation is thus important, but good ventilation comes at the expense of higher energy consumption. In your Master project, you will participate in a multi-partner project on “Healthy Energy-efficient Urban Home Ventilation” (<https://www.sintef.no/projectweb/healthy-energy-efficient-urban-home-ventilation/>). You will work together with a post-

doctoral researcher and measure indoor air pollutant levels with highly advanced chemical-analytical instruments (proton-transfer-reaction mass spectrometer, scanning mobility particle sizer). You will investigate what gases and particles are emitted during cooking and study how different ventilation solutions affect indoor air pollutant levels.

# Prosjektoppgaver

*Prosjektene beskrevet her er forslag basert på hva som er klappet og klart, men vi er fleksible om du har andre ideer 😊*

Trace gases in the atmosphere affect both climate and air quality. Methane ( $\text{CH}_4$ ), for example, is an important greenhouse gas, while nitrogen dioxide ( $\text{NO}_2$ ) contributes to the formation of smog and affects human health. We offer two BSc projects, in which the two students will focus on  $\text{CH}_4$  and  $\text{NO}_2$  in the atmosphere, respectively. The students will learn how to measure atmospheric concentrations of the gases using advanced real-time analyzers. They will carry out stationary measurements over an extended period and interpret the obtained data. Furthermore, they will carry out measurements from a mobile laboratory to characterize selected sources in the urban environment of Oslo.





# Lyst å joine?

## Atmosfærekjemi

Masterfag	Bachelorfag
KJM5240 - Massespektrometri	KJM3010 – Prosjektoppgave 1
KJM5700 – Miljøkjemi II	KJM3020 – Prosjektoppgave 2
GEO4904 - Atmosfærekjemi	KJM1700 – Miljø og Klima
KJM4070 - Biogeokjemi	KJM3070 - Biogeokjemi
GEO4399 – Geofysisk Data	KJM3400 – Analytisk kjemi 2
GEO4012 – Vit. skriving/presentasjon	(GEO3100 – Miljøgeologi)
Spesialpensum – PTR-TOF-MS	(GEO3032 – Klimaendringer/Effekt)
MAE4000 – Vit. Databehandling	
(GEO4161 – Forurensing i Geomiljøet)	
(GEO5900 – Kjemiske Prosesser i Mark- og Grunnvann)	Tips: Lær python, R, matlab, excel, e.l.



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