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First results of CERN's CLOUD experiment now published in NATURE journal

PTR-MS technology made in Austria contributes to important results of the CLOUD experiments at CERN.

The CLOUD experiment has been designed to study the effect of cosmic rays on the formation of atmospheric aerosols - tiny liquid or solid particles suspended in the atmosphere - under controlled laboratory conditions. Atmospheric aerosols are thought to be responsible for a large fraction of the seeds that form cloud droplets.

The CLOUD results show that trace vapors assumed until now to account for aerosol formation in the lower atmosphere can explain only a tiny fraction of the observed atmospheric aerosol production. The results also show that ionization from cosmic rays significantly enhances aerosol formation. Precise measurements such as these are important in achieving a quantitative understanding of cloud formation, an important contribution to climate models.

The prestigious NATURE journal has now published first results from the CLOUD experiment, where two PTR-MS instruments from the Institute for Ion Physics and Applied Physics of the University of Innsbruck contributed to this cutting edge project. A quadrupole based PTR-MS was used to monitor trace concentrations of Ammonia and a PTR-TOF-MS system (based on time of flight technology) continuously scanned organic vapor concentrations in the CLOUD chamber.

IONICON Analytik is the world's leading manufacturer of PTR-MS instruments and has developed the high-resolution PTR-TOF-MS technology together with the Institute for Ion Physics and Applied Physics of the University of Innsbruck. IONICON commercialized the PTR-TOFMS series very successfully in 2007 for the ultra-sensitive and high-resolution quantification of VOCs in real-time.

IONICON is a proud partner of the CLOUD Initial Training Network (CLOUD-ITN) project, a multi-site network of 8 Ph.D. students and 2 post-docs at 9 partner institutions across Europe.

IONICON is the world's leading producer of on-line VOC detectors with market-leading, on-line and real-time, single-digit pptv-level detection limits using the unique proton transfer reaction – mass spectrometry PTR-MS technology. Since 1998 IONICON is serving leading scientists with VOC monitoring and quantification instruments in many different areas including environmental research, pollution monitoring, atmospheric chemistry, food & flavour science and illicit substances detection.

The IONICON product range comprises the PTR-QMS Series (IONICON High-Sensitivity PTR-QMS 500 with its market-leading detection limit of < 1 pptv; the IONICON PTR-QMS 300, a very robust and small VOC monitoring system with a very advantageous price) and the PTR-TOFMS Series (IONICON PTR-TOF 8000



providing a mass resolution of up to 8000 $m/\Delta m$ and the IONICON PTR-TOF 2000 with its detection limit < 5 pptv).

IONICON also produces special monitoring solutions for various industrial applications, has a strong in-house R&D department and is partner of many international research projects with renowned academic partners.

Link to news article in NATURE:

<http://www.nature.com/news/2011/110824/full/news.2011.504.html>

Publication: *Role of sulphuric acid, ammonia and galactic cosmic rays in atmospheric aerosol nucleation, Nature 476, 429-433 (2011).*

DOI-link : <http://dx.doi.org/10.1038/nature10343>

Link to IONICON corporate blog (link to story):

<http://blog.ionicon.com/2011/08/first-results-of-cerns-cloud-experiment-now-published-in-nature-journal>

Link to IONICON homepage: <http://www.ionicon.com>

Link to "Institute for Ion Physics and Applied Physics" of the University of Innsbruck:

<http://www.uibk.ac.at/ionen-angewandte-physik/umwelt/index.html.en>

Link to CERN's CLOUD experiment press release:

<http://public.web.cern.ch/press/PressReleases/Releases2011/PR15.11E.html>

Link to CLOUD-ITN project:

http://www.uni-frankfurt.de/english/research/inter_projects/clouditn/index.html