



Press Release – Innsbruck – 09. October 2013

PTR-TOF technology contributes to CLOUD experiment at CERN

Scientists publish new results concerning cloud formation in „Nature“.

The PTR-TOF-MS technology, developed in Innsbruck, Austria and successfully commercialized by IONICON, is part of the large-scale experiment “CLOUD” at CERN in Switzerland. IONICON CEO Lukas Märk reports that highly sensitive “PTR-TOF-MS” (Proton-Transfer-Reaction Time-of-Flight Mass Spectrometry) instruments contributed to a better understanding of new particle formation on a molecular level. New results have been published by the CLOUD team in the prestigious journal „[Nature](#)“.

The CLOUD experiment at CERN (European Organization for Nuclear Research) reports a major advance towards solving a long-standing enigma in climate science: how do aerosols - tiny solid or liquid particles suspended in the air - form in the atmosphere, and which gases are responsible? This is a key question in understanding the climate, since aerosols cause a cooling effect by reflecting sunlight and by seeding cloud droplets.

Researchers found out that minute concentrations of amine vapours combine with sulphuric acid to form aerosol particles at rates similar to those observed in the atmosphere. Amines are emitted both from human activities such as animal husbandry, and from natural sources.

The CLOUD experiment's unique ultra-clean chamber allowed the collaboration to demonstrate that the extremely low concentrations of amines typically found in the atmosphere - a few parts per trillion by volume - are sufficient to combine with sulphuric acid to form highly stable aerosol particles at high rates.

The measured sensitivity of aerosol formation to amines came as a surprise, and points to a potentially significant climate cooling mechanism. Moreover, since amine scrubbing is likely to become an important technology for capturing carbon dioxide emissions from fossil-fuelled power plants, this effect is likely to rise in future.

The PTR-TOF-MS technology used to monitoring the CLOUD aerosol-chamber by Prof. Armin Hansel and his team, was developed at the Institute for Ion Physics and Applied Physics of the University of Innsbruck in collaboration with IONICON Analytik being the world's leading manufacturer of PTR-MS instruments.

IONICON commercialized the PTR-TOF-MS technology very successfully in 2007 and ever since produces the world's most sensitive and highest resolution [PTR-TOF-MS instruments](#) for the measurement of VOCs in real-time.

Well recognized universities and companies use the [PTR-TOF 8000](#), IONICON's flagship model, to solve challenging problems in different fields ranging from environmental, to food, flavor and fragrance as well as life science applications.

The „Cosmics Leaving Outdoor Droplets“, or in short „CLOUD“ experiment started in 2009. IONICON is a proud partner of the [„CLOUD-TRAIN Marie Curie Initial Training Network“](#), a multi-site network consisting of 12 Ph.D. students and 3 post-docs working at 10 partner-institutions all over Europe.



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Please refer to the corresponding press briefing attached to this PR for more information.

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