

## Heraeus Noblelight Presents a New Generation of Ozone Generating UV Lamps at the IOA/IUVA World Congress

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Heraeus Noblelight is exhibiting at the congress of the International Ozone Association and the International Ultraviolet Association

- Two Papers from Heraeus Experts will be presented at the IOA/IUVA World Congress 2007: “New Generation of Ozone Generating Low Pressure Lamps”; and “Measurements of Ozone Generating Low Pressure Lamps”

For the first time, the synergies and the applications of ozone and ultraviolet light (UV) will be discussed and evaluated at the same conference. The “International Ozone Association” (IOA) and the “International Ultraviolet Association” (IUVA) are together organising an international congress, which will take place from the 27 to 29 August in Los Angeles, USA. As a manufacturer of UV lamps, Heraeus Noblelight is a member of the IUVA and will be showing specialist light sources for the treatment of water, air and surfaces at the event. Two experts from the lamp manufacturer will present papers on ozone-generating lamps to the specialist audience: Dr Alex Voronov, from Heraeus Research and Development will introduce a new generation of ozone-generating low pressure lamps; Dr Ralf Dreiskemper, manager of the Heraeus Measurement will talk on the subject of measurement of ozone-generating lamps.

### New Generation of Ozone-Generating Low Pressure Lamps

Ozone production using low pressure lamps is a well-known process, whose full potential has still not been fully realised. By using special Heraeus UV lamps, ozone is produced from the oxygen in ambient air, by using the emitted radiation at a wavelength of 185 nanometers. Today, the challenges for UV lamps lie in significantly increasing efficiency at 185 nanometers, ensuring the consistency of the UV output over the operating life and extending lamp life.

With the introduction of the unique Heraeus Longlife coating, which was optimised for application at 185nm and ensures minimum losses, Heraeus Noblelight has developed a new generation of UV lamps. As a result, low pressure lamps have become an efficient and reliable vacuum UV light source, which can be used effectively in many ozone-generating

applications. In addition, this Heraeus long-life coating significantly extends the life of UV lamps.

These lamps are matched with individual applications and are already finding application in water oxidation and air treatment, such as the break down of greases and odours. In his paper, Dr Voronov will introduce various coating technologies and compare the emission and power loss at 185nm. He will present the parameters of the new generation of ozone-generating lamps and will demonstrate a simple model to allow practical calculation of the ozone concentration in an air flow for emission wavelengths of 185nm and 254nm. The combination of “Ozone and UV radiation” in a single lamp opens up new areas of application in air treatment and exhaust air treatment, for example in the destruction of VOCs (Volatile Organic Compounds) and in applications in “Advanced Oxidation”.

#### Measurements of Ozone-Generating Lamps

Lamp manufacturers have to carry out reliable lamp measurements to be able to specify product properties, technical data and operating life performance. For this reason, Heraeus Noblelight operates a modern and independent measurement laboratory, which is accredited to DIN EN ISO/IEC 17025:2005.

There are very few standard measuring procedures specifically for Vacuum UV and UVC lamps, which make comparisons between different products difficult. Furthermore, measurement data from system manufacturers is called upon as a basis for the design and development of new, more efficient systems. Lamp measurement results can be interpreted correctly only when taking measurement uncertainties into consideration. Incorrect interpretation of this data can possibly lead to wrongly dimensioned equipment drawings and system designs.

Dr Ralf Dreiskemper is in charge of the Measurement laboratory at Heraeus Noblelight and, in his presentation to the IUVA, he will provide a brief overview on the range of conventional measurements of UVC low pressure lamps at 254nm and on the source and extent of measurement uncertainties.

Radiometric measurements at wavelengths below 200nm, for example for ozone-generating lamps, are much more difficult. Some additional parameter must be taken into consideration. Radiation at 185 nm is strongly absorbed by the surrounding atmosphere. The absorption of radiation also influences measurements at 254nm to an unknown degree. Consequently, the simultaneous measurement of radiation at 185nm and 254 nm must be carried out in an inert gas or under vacuum in a sealed chamber. At the same time, different cooling conditions affect the intensity of the UV lamps and must be taken into consideration.

Together with his team, Dr Dreiskemper has developed a measuring procedure which provides for reproducible results and will present previously obtained data at the Los Angeles congress.

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Heraeus Noblelight GmbH with its headquarters in Hanau and with subsidiaries in the USA, Great Britain, France, China, Australia and Puerto Rico, is one of the technology- and market-leaders in the production of specialist light sources. In 2006, Heraeus Noblelight had an annual turnover of 88 Million € and employed 651 people worldwide. The organisation develops, manufactures and markets infrared and ultraviolet emitters for applications in industrial manufacture, environmental protection, medicine and cosmetics, research, development and analytical laboratories.

Heraeus, the precious metals and technology group headquartered in Hanau, Germany, is a global, private company in the business segments of precious metals, sensors, dental and medical products, quartz glass and specialty lighting sources. With revenues of more than EUR 10 billion and more than 11,000 employees in over 100 companies, Heraeus has stood out for more than 155 years as one of the world's leading companies involved in precious metals and materials technology.

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