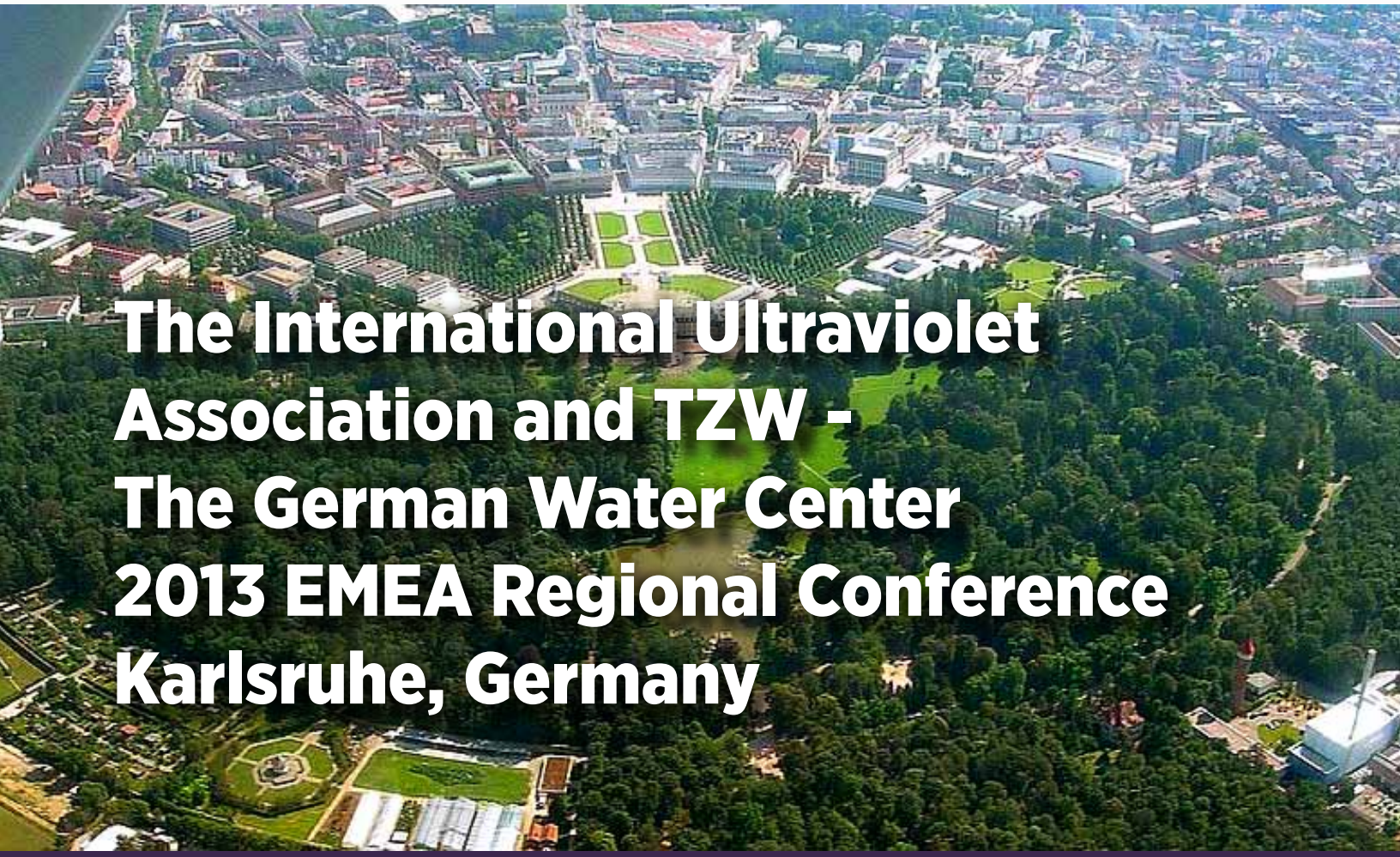
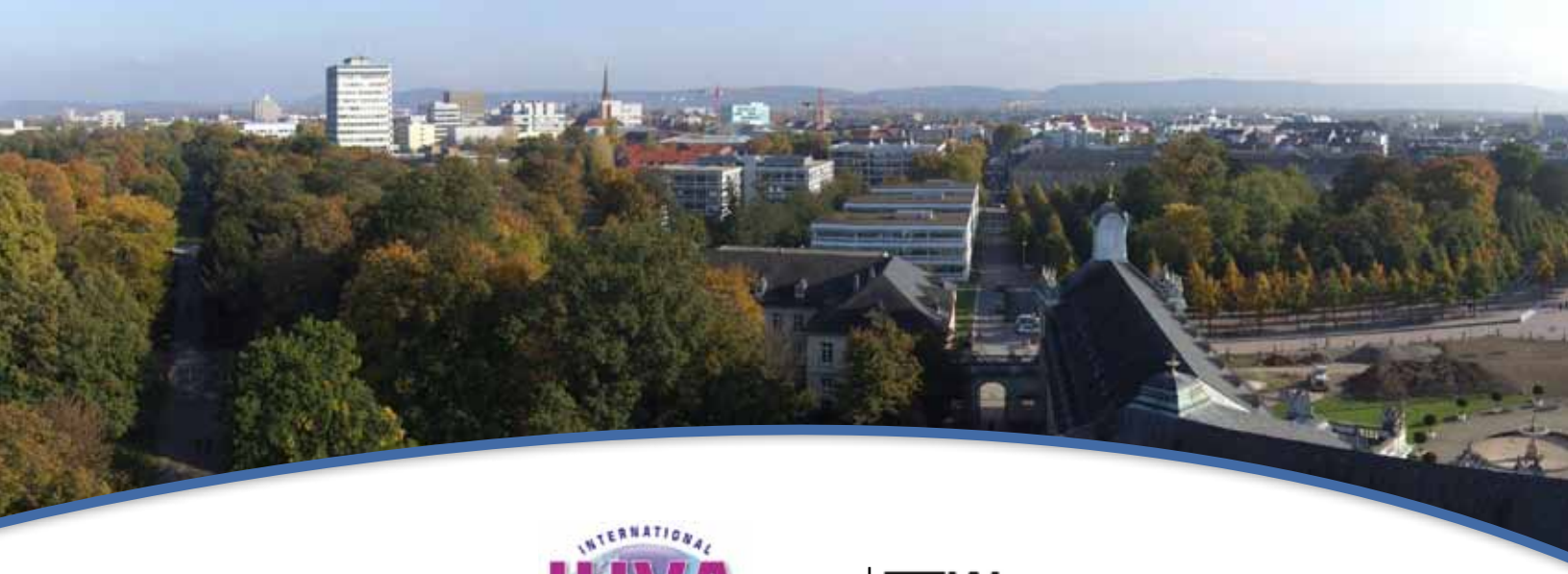


# The International Ultraviolet Association and TZW – The German Water Center 2013 EMEA Regional Conference Karlsruhe, Germany

June 4-5, 2013

**Kongresszentrum Karlsruhe: Stadthalle**
**Festplatz 9**
**76137 Karlsruhe**



# Welcome Letter from the IUVA President

**Dear IUVA Members, Colleagues, and Friends**

On behalf of the International Ultraviolet Association (IUVA) Board of Directors, welcome to Karlsruhe, Germany and the 2013 EMEA Regional Conference. We are thrilled you are joining us for this premier education and networking event for the UV community. In addition, we are so pleased to partner with TZW: DVGW-Technologiezentrum Wasser (The German Water Center) on this event. In 2004 both groups partnered to produce this same type of event, and it was extremely successful.

As President of the IUVA, I think it is increasingly important for us to realize that the UV community has an obligation to embrace life-long learning. And this conference in Karlsruhe is focused on that priority.
Throughout the course of these next few days, the array of educational programs offered will energize us, providing new avenues of thought and approaches to education and research.

I would like to express our deepest appreciation to the members of the Program Committee who have worked on organizing this conference. In particular, I would like to extend a special thanks to EMEA Hub Director Dr. Andreas Kolch and Dr. Jutta Eggers for their dedication and commitment to making this conference a success. Other members of the Committee are: Dr. Joop Kruithof, Dr. Michael Templeton, Professor Regina Sommer and Dr. Margarete Bucheli.

We hope you enjoy this event and hope to see you in Las Vegas for our World Congress in September 2013.

**Paul Swaim**
IUVA President

# Welcome Letter from the Mayor of Karlsruhe

**Ladies and Gentlemen,**

Welcome to Karlsruhe!

I am very pleased to welcome you. We are happy to have you as our guests. We really appreciate that meetings like yours choose Karlsruhe as setting. 40.000 students at nine universities and numerous research and development facilities make Karlsruhe an important scientific center in Baden-Württemberg and worldwide. You will notice that Karlsruhe has plenty to offer: universities and colleges, pioneering institutions for future technologies are complemented by a wide range of arts and cultural facilities.

Karlsruhe is known for its never-ending inventiveness. According to a legend, the city itself has its origin in a brilliant flash of inspiration. Thus the Margrave Karl Wilhelm of Baden-Durlach dreamed of a new castle. It should be located at the center of a circle from where treelined avenues similar to sunrays make up the street patterns of the city. Over time, the city grew along these rays and today is even more than a city of dreams. Since the days of the Margrave this spirit has pushed forward amazing developments. Many smart persons have made their first steps in research here and finally made their breakthrough inventions and discoveries.

And maybe there will be even more inspiring ideas coming up in the next two days. With this in mind, I hope you enjoy the conference and wish you a nice stay in Karlsruhe.

**Margret Mergen**
Mayor of the City of Karlsruhe

## June 3rd

15:00 - 17:00 **Pre-Registration**

18:00 - 19:00 **Welcome Reception**
Kindly sponsored by Stadtwerke Karlsruhe GmbH

## June 4th

08:00-17:00 **Registration**

09:30 **Opening**

**Margret Mergen**
1st Mayoress of the City of Karlsruhe

**Paul Swaim**
IUVA President

**Dr. Josef Klinger**
CEO, TZW: DVGW-Technologiezentrum Wasser, Germany

10:15 **Keynotes**

**Structure of Water Supply in Germany**
Prof. Dr. Matthias Maier
Stadtwerke Karlsruhe GmbH, Germany

**Application of Excilamps in Photoscience**
Prof. Dr. Thomas Oppenländer
Furtwangen University, Germany

Moderator: Josef Klinger

11:15 **Coffee & Exhibition**

11:35 **Drinking Water Applications**

**Genotoxicity and Byproduct Formation by UV Treatment**
Bram J. Martijn
PWN Water Supply Company North Holland, The Netherlands

**Disinfection with UV Instead of Chlorine Dioxide in the City of Basel, Switzerland**
Beate Hambsch
TZW: DVGW-Technologiezentrum Wasser, Germany

**Synergism of Low Pressure UV and Chlorine for Water Disinfection**
Giuliana Ferrero
UNESCO-IHE, The Netherlands

Moderator: Michael Templeton

12:35 **Lunch & Exhibition**

13:35 **Drinking Water Applications**

**Policy on UV-disinfection of Treated Bank-Infiltration Groundwater for the Supply of Drinking Water in the Netherlands**
Ruud Kolpa
Oasen N.V., The Netherlands

**Use of Medium-Pressure UV Systems for Drinking Water Disinfection within the GELSENWASSER Group**
Bjoern Woelfel
Gelsenwasser AG, Germany

Moderator: Bram Martijn

14:15 **Advanced Oxidation Processes**

**Micropollutants Removal in Gold Bar Wastewater Effluent Using the Medium-Pressure UV/$H_2O_2$ Advanced Oxidation Process**
Zengquan Shu
University of Alberta, Canada

**Optimization of UV-Based Advanced Oxidation Processes based on the Water Matrix**
Jens Scheideler
Xylem Water Solutions, Germany

**Degradation of Selected Pharmaceuticals and T&O Causing Compounds by UV Photolysis and UV/$H_2O_2$ Treatment**
Giuliana Ferrero
UNESCO-IHE, The Netherlands

Moderator: Joop Kruithof

15:15 **Coffee & Exhibition**

15:35 **Pool Water & Waste Water**

**Developments and Approaches in Waste Water and Exhaust Air Treatment: Photooxidation and Photocatalytical Processes in Combination with Nano and Bio Technologies**
Frank Seitz
IBL Umwelt- und Biotechnik GmbH, Germany

**Progress on the dimensioning of pool-water-UV-applications**
Ralph Bergmann
BWT Wassertechnik GmbH, Germany

**Innovations in UV Technology at the Eastern Treatment Plant in Melbourne, Australia**
Wayne Lem
Trojan Technologies, Canada

Moderator: Karl Linden

19:00 **Conference Dinner**

## June 5th - Session 1

09:00 **UV Sources**

**Fundamental Aspects of UVC LEDs – Designing of a System Using a Unique Approach for Point-of-Use Water Disinfection**
Rajul Randive
Crystal IS Inc, USA

**To Model or Measure: That Is the Question: Options for Characterization of Polychromatic Light Sources**
Paul Ropic
Aquionics Inc, USA

**A Conceptual Approach to Characterize Amalgam Lamps with a Comparable Procedure**
Sven Kaemmerer
Xylem Water Solutions, Germany

**Influence of Quartz glass Properties on UV-Performance of Sleeves for Systems Working with Medium Pressure Mercury Lamps**
Erich Arnold
Heraeus Noblelight GmbH, Germany

**Optimization and Characterization of High Efficient Coaxial Xenon Excimer Lamps for Water Disinfection**
Celal Mohan Oeguen
Light Technology Institute, Germany

Moderator: Andreas Kolch

10:40 **Coffee & Exhibition**

11:00 **UV Technology I**

**Deploying UV-C LED Technology Today**
Oliver Lawal
Aquionics Inc, USA

**How You Drive Your UV System is What Gets you Ahead**
Kirsten Meyer
Xylem Water Solutions, Germany

**Maintaining UV Reactor Functionality with Infused Iodine Vapor Bubbles**
Michael Radicone
i2 Air Fluid Innovation Inc., USA

**Compact UV Disinfection Modules**
Volker Plapper
SCHOTT AG, Germany

Moderator: Paul Swaim

12:20 **Lunch & Exhibition**

## June 5th - Session 2

09:00 **UV Measurement I**

**PTB Traceable Calibrated Reference UV Radiometer for Measurements at High Irradiance Medium Pressure Mercury Discharge Lamps**
Gabriel Hopfenmüller
sgluxGmbH, Germany

**Precise and Traceable Stability Verification of UV Radiometer Sensors by Temperature and Exposure-Controlled Chemical Actinometry**
Heinz Anderle
Baxter BioScience, Austria

**Developing and Setting a Calibration Facility for UV Sensors at High Irradiance Rates**
Bettina Barton
Physikalisch-Technische Bundesanstalt, Germany

**Variability in Fluence Calculations in Medium Pressure UV Collimated Beam Exposures**
Ian Mayor-Smith
Imperial College London, UK

**Estimating UV Disinfection Dose by Direct Quantification of DNA Damage in Indigenous Microorganisms in Water**
Michael Templeton
Imperial College London, UK

Moderator: Regina Sommer

10:40 **Coffee & Exhibition**

11:00 **UV Measurement II**

**Traceable Measurement of the Spectral Irradiance of UV Water Disinfection Plants**
Peter Sperfeld
Physikalisch-Technische Bundesanstalt, Germany

**Requirements for UV Sensors in Drinking Water Disinfection Devices**
Wolfgang Werner
TZW: DVGW-Technologiezentrum Wasser, Germany

**Performance Validation of UV Disinfection Systems: Recirculation Mode Causes Unreliable Results in Biodosimetry**
Regina Sommer
Medical University Vienna, Austria

**Evaluation of UV Dose Monitoring Algorithms Specified by German and Austrian Standards**
Harold Wright
Carollo Engineers, USA

Moderator: Margarete Bucheli

12:20 **Lunch & Exhibition**

## June 5th

13:20 **UV Technology II**

**First NWRI / USEPA Validation in Europe – Meet the Duron**
Kirsten Meyer
Xylem Water Solutions, German

**Instant Disinfection of Point-of-Use Water, Efficient and Independent of Water Temperature**
Dr. ing. M.J. van der Meer
Philips Lighting, The Netherlands

**Define the Optimal Operating Conditions for a UV Reactor Through CFD Simulation**
Federico Solari
Department of Industrial Engineering, Italy

Moderator: Jutta Eggers

14:20 **Closing Ceremony**

# Keynote Speakers

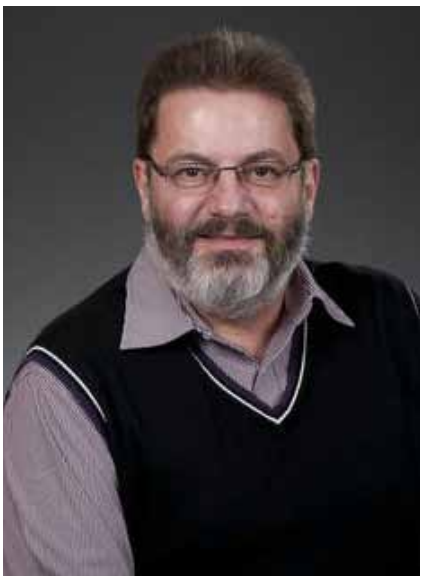
## Prof. Dr. Matthias Maier

Matthias Maier studied Civil Engineering at the University of Applied Sciences in Karlsruhe. His graduated with a thesis focused on Nitrate removal in water treatment plant of small communities in 1988. After working at the water works Department of Stadtwerke Karlsruhe he finished his approval as a civil servant expert for water supply, waste water treatment and waste disposal at the Ministry of the Environment of the Federal State of Baden-Württemberg in 1990. Between 1990 and 2001 he holds the post of a Head of Department of Hydrology and Groundwater Protection before he was appointed for the Head of Dept. of Waterworks from 2001 to 2003 and the deputy Director of Waterworks and Power stations. Since 2003 he is the acting Director of Waterworks at Stadtwerke Karlsruhe. He also holds the function of the speaker of the chief executives since 2006 and was elected as a board representative to the board of management of Stadtwerke and the associated holding company in 2012.

His scientific work included research into fields of hydrologic aspects like numeric ground water modelling, risk management and investigations of sedimentation processes in water distribution systems. His main focus was on the release of Polynuclear Aromatic Hydrocarbons from the coal tar of water mains which was a breakthrough in the understanding of the occurrence of PAHs in drinking water distribution systems caused by the impact of disinfection agents or hydraulic forces of biofilm on the internal walls of the pipes. This work was awarded with the Maarten Schalekamp-Award at the IWA congress in Buenos Aires in 1999. His scientific work is documented in 90 national and international publications. He was appointed as a honorary Professor at the University of Applied Sciences in 2011 where he is working in student education since 1992. He was a visiting Professor at the University of Ruhuna in Sri Lanka and still is a visiting Professor at the Ocean University in Colombo, Sri Lanka, as well as at the Centre for Environmental Health Engineering, a WHO collaborating centre, at the University of Surrey in England.

Furthermore, he is working in many water associations like the DVGW and the Association of Water Works on Lake Constance and the river Rhine AWBR where is contributing to the working groups. He is also engaged in NGO organisations like the European Well and Fountain Soc. and the International Water Aid Organisation where he is acting as Vice-President.

## Prof. Dr. Thomas Oppenländer



Thomas Oppenländer studied chemistry at the University of Würzburg (Germany). He received his doctoral degree (Dr. rer. nat.) in 1984 for his work on 185-nm-photochemistry of azoalkanes in solution as a member of the research group of Waldemar Adam. During the following year he was a postdoctoral fellow at the Colorado State University (Fort Collins, USA) in the group of Albert I. Meyers being involved in asymmetric synthesis of dihydropyridines and NADH mimics. From 1985 to 1991 he worked for F. Hoffmann-La Roche in Basle (Switzerland). Here, he was engaged in research on drug phototoxicity and on the photochemical production of fine chemicals. Since 1991 he is a full professor at the Hochschule Furtwangen University (HFU, Germany) at the Department of Medical and Life Sciences. Since then he is involved in photo-initiated advanced oxidation processes (AOPs) and technologies (AOTs). His main research interests concentrate on the potentials of modern excimer lamps (excilamps) for photochemical purification and detoxification of water and air. He is an author of about forty peer-reviewed scientific publications and he published a book on “Photochemical Purification of Water and Air, Advanced Oxidation Processes (AOPs): Principles, Reaction Mechanisms, Reactor Concepts”, Wiley-VCH, Weinheim, 2003. He is a member of the German Chemical Society (GDCh) and the European Photochemistry Association (EPA). From March till August 2007 he was a DAAD Short-Term Lecturer at the Department of Civil and Environmental Engineering of the University of Alberta Edmonton (Canada).

# Conference Program Committee Members

**Dr. Andreas Kolch**
EMEA Hub Director
International Ultraviolet Association

**Dr. Jutta Eggers**
Technology and Economics,
Test Center: UV Disinfection Devices
TZW: DVGW-Technologiezentrum Wasser

**Dr. Michael Templeton**
Senior Lecturer, Department of Civil and Environmental Engineering
Imperial College London

**Prof. Dr. Regina Sommer**
Associate Professor
Medical University Vienna

**Dr. Joop Kruithof**
Owner
J.C. Kruithof Consultancy

**Dr. Margarete Bucheli**
Editor in Chief
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