

Innovative and Energy-efficient: Clean Water without Chemicals

European Union Funds “Eco-UV“ Research Project with Nearly Four Million Euros – Chemical-free Water Processing and Disinfection of Drinking Water



*“Eco-UV” project develops processes for chemical-free cleaning of water in industry.
(Photo: pixabay.com)*

Water is used as a resource, for cooling or as a solvent. Water also is indispensable in industrial production. Environmentally compatible processing of water now is subject of the “Eco-UV” research project funded by the European Union with EUR 3.9 million under the “Horizon 2020” programme. Within the framework of the project, engineers of Karlsruhe Institute of Technology (KIT) plan to develop efficient UV emitters and long-lived electronic systems.

Ultraviolet (UV) radiation is applied for processing drinking water among others. Within shortest periods of time, the short-wave radiation can significantly reduce the bacterial count even without chemical additives. The “Eco-UV” EU project of industry and science is aimed at developing an innovative UV technology for water processing, from disinfection of drinking water to the detoxification of industrial process water. In addition, the process to be developed is to reduce the emission of carbon dioxide (CO₂) and overall environmental pollution. “A high energy efficiency and long service life will be major features of the new system,” Dr. Rainer Kling of KIT’s Light Technology Institute

**Monika Landgraf
Chief Press Officer**

Kaiserstraße 12
76131 Karlsruhe, Germany
Phone: +49 721 608-47414
Fax: +49 721 608-43658
E-mail: presse@kit.edu

**For further information,
please contact:**

Margarete Lehné
Press Officer
Phone: +49 721 608-4 8121
Fax: +49 721 608-4 3658
E-mail: margarete.lehne@kit.edu

says. He coordinates KIT's work package. "At KIT, we are working on the key component, a new, mercury-free UV emitter." In addition, KIT engineers will supply the ballast for this lamp. "With silicon carbide as semiconductor material, we reach a very high power density. This does not only increase efficiency, but also reduces energy consumption and CO₂ emission."

Within the framework of the project, the new UV emitter technology will be tested for long-term stability, aging effects, and dose-effect relations under application conditions. For this purpose, industry and science cooperate under the "Eco-UV" project. The emitters made by KIT will be integrated into a system of Hanovia, a British manufacturer of UV systems (overall project coordinator). The Water Technology Center (TZW) at the DVGW (Deutscher Verein des Gas- und Wasserfaches e.V. - Technisch-wissenschaftlicher Verein = DVGW German Technical and Scientific Association for Gas and Water) will be responsible for the monitoring and certification of the systems, the Swedish environmental research institute IVL will make a complete lifecycle assessment of costs and benefits for the environment compared to conventional UV technologies. From the results, test protocols will be derived for various end user applications. They may serve as a basis for a future standardized validation of UV applications in the EU.

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Karlsruhe Institute of Technology (KIT) pools its three core tasks of research, higher education, and innovation in a mission. With about 9,300 employees and 25,000 students, KIT is one of the big institutions of research and higher education in natural sciences and engineering in Europe.

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This press release is available on the internet at www.kit.edu.