

## Curriculum Vitae - Dr. Peter Kuschk

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**Address:** Helmholtz Centre for Environmental Research – UFZ, Department of Environmental Biotechnology, Permoserstrasse 15, D-04318 Leipzig, Germany

Phone: ++49 341 235-1765, Fax: ++49 341 235-1471, Email: [peter.kuschk@ufz.de](mailto:peter.kuschk@ufz.de)

### Academic career:

2008/2009	guest lecturer at the University of Applied Sciences Mittweida for "Drinking Water Purification and Wastewater Treatment"
2001 - 2004	guest lecturer at the University of Applied Sciences Anhalt, in Köthen, for "Phytoremediation"
since 1998	head of the group Ecological Water Treatment Technologies in the Department of Environmental Biotechnology of the UFZ
1992 – 1995	scientific co-worker at the Centre for Environmental Research Leipzig-Halle (UFZ)
1991	PhD thesis, methanogenic fermentation of a wastewater from the coal pyrolysis, University Oldenburg
1982 – 1991	scientific co-worker in the Institute for Biotechnology in Leipzig; task: anaerobic digestion of industrial wastewaters
1977 – 1982	studied biochemistry at the University of Halle (Germany)

### Research areas:

- Low tech nature-near methods for wastewater treatment (see also web page: [www.phyto.ufz.de](http://www.phyto.ufz.de))
- Microbial anaerobic processes and metal removal/fixation in artificial pond/wetland systems
- Fate of pharmaceutical residues in municipal wastewater in planted soil filter and pond systems (constructed wetlands)
- Cycles of nitrogen, sulphur and carbon in the technical ecosystem "constructed wetland" for wastewater treatment
- Oxygen-input into the rhizosphere by helophytes
- Hygienization of domestic sewage in ponds and constructed wetlands

### **Participation at international projects (selection):**

- EU-INCO-Project, Peri-urban mangroves forests as filters and potential phytoremediators of domestic sewage in East Africa – PUMPSEA ; grant INCO-CT2004-510863, PUMPSEA), 02/2005-01/2008
- Cooperation project Germany-Mexico „Passive treatment of tannery effluents“; MEX03/Z05; 2004-2006, funded by BMBF; Partner: BioPlanta GmbH, UFZ-Leipzig, Centro de Investigación y Asesoría Tecnología en Cuero y Calzado, Leon, Mexico
- Cooperation project Germany-Mexico MEX00/004 „Novel insights in the use of aquatic plants for heavy metal removal“ (2000-2003 , funded by BMBF; partners: BioPlanta GmbH in Leipzig, CIATEC in Leon and Institute of Ecology in Xalapa)
- NATO-Collaborative Linkage Grant 978918 (2001-2004; „Heavy Metal Removal by Bioreactors and constructed wetlands“; Partners: IBPM in Pushchino, Russia and University Wageningen, The Netherlands)
- Cooperation project Germany-Mexico, „Reducing pathogenic germs in municipal sewage using constructed wetlands“, 2000-2003, funded by BMBF; Partner: UFZ-Leipzig, Martin-Luther-University Halle-Wittenberg, Universidad Nacional Autonoma de Mexico, Universidad Autonoma de Yucatan, Mexico, Umweltschutz Nord GmbH & Co

### **Publications:**

- Wiessner, A., Rahman, K.Z., Kuschik, P., Kästner, M., Jechorek, M. 2010. Dynamics of sulphur compounds in horizontal sub-surface flow laboratory-scale constructed wetlands treating artificial sewage. *Water Research* 44(20), 6175-6185
- Kuschik, P., Stottmeister, U., Liu, Y.-J., Wiessner, A., Kästner, M., Müller, R.-A. 2010. Batch methanogenic fermentation experiments of wastewater from a brown coal low-temperature coke plant. *Journal of Environmental Sciences* 22 (2), 192-197
- Zhu, G., Jetten, M.S.M., Kuschik, P., Ettwig, K., Yin, C. 2010. Potential roles of anaerobic ammonium and methane oxidation in the nitrogen cycle of wetland ecosystems. *Appl. Microbiol. Biotechnol.* 86 (4), 1043-1055
- Stottmeister, U., Kuschik, P., Wiessner, A. 2010. Full-scale bioremediation and long-term monitoring of a phenolic wastewater disposal lake. *Pure Appl. Chem.* 82 (1), 161-173
- Langenbach, K., Kuschik, P., Horn, H., Kästner, M. 2010. Modeling of slow sand filtration for disinfection of secondary clarifier effluent. *Water Research* 44 (1), 159-166
- Macherius, A., Haertig, C., Kuschik, P., Shtemenko, N., Moeder, M. 2009. Analytical methods to characterize the composition of surface lipids of helophytes exposed to contaminated water.

Counteraction to Chemical and Biological Terrorism in East European Countries. Book series: NATO Science for Peace and Security, Series A – Chemistry and Biology, 95-100

- Shtemenko, N., Kuschk, P., Moeder, M., Geyer, W., Haertig, C., Voevoda, M., Shepelenko, V., Alexeevskaya, I. 2009. Influence of contaminant stress on the surface lipids composition of some helophytes. Counteraction to Chemical and Biological Terrorism in East European Countries. Book series: NATO Science for Peace and Security, Series A – Chemistry and Biology, 101-108
- Langenbach, K., Kuschk, P., Horn, H., Kästner, M. 2009. Slow sand filtration of secondary clarifier effluent for wastewater reuse. *Environmental Science and Technology* 43, 5896-5901
- Liu, Y.J., Kuschk, P., Zhang, A.N., Wang, X.C. 2009. Characterisation of phenol degradation by *Acinetobacter* sp. XA05 and *Sphingomonas* sp. FG03. *Chemistry and Ecology* 25 (2), 107-117. DOI: 10.1080/02757540902849278
- Imfeld, G., Braeckevelt, M., Kuschk, P., Richnow, H.H. 2009. Monitoring and assessing processes of organic chemicals removal in constructed wetlands. *Chemosphere* 74 (3), 349-362
- Rahman, K.Z., Wiessner, A., Kuschk, P., Mattusch, J., Offelder, A., Kästner, M., Müller, R.A. 2008. Redox dynamics of arsenic species in the root-near environment of *Juncus effusus* investigated in a macro-gradient-free rooted gravel bed reactor. *Eng. Life. Sci.* 8 (6), 612-621
- Rahman, K.Z., Wiessner, A., Kuschk, P., Mattusch, J., Kästner, M., Müller, R.A. 2008. Dynamics of arsenic species in laboratory-scale horizontal subsurface-flow constructed wetlands treating an artificial wastewater. *Eng. Life Sci.* 8 (6), 603-611
- Kuschk, P., Wiessner, A., Paredes, D., Kästner, M., Münch, Ch., Müller, R.A. 2008. Pflanzenkläranlagen - Zukunftspotenzial und Forschungsbedarf. *Chemie Ingenieur Technik* 80 (12), 1785-1793
- Wiessner, A., Gonzalias, A.E., Kästner, M., Kuschk, P. Effects of sulphur cycle processes on ammonia removal in a laboratory-scale constructed wetland planted with *Juncus effusus*. *Ecological Engineering* 34, 162-167
- Braeckevelt, M., Mirschel, G., Wiessner, A., Rueckert, M., Reiche, N., Vogt, C., Schultz, A., Paschke, H., Kuschk, P., Kaestner, M. 2008. Treatment of chlorobenzene-contaminated groundwater in a pilot-scale constructed wetland. *Ecological Engineering* 33 (1), 45-53
- Gruber, H., Wiessner, A., Kuschk, P., Kaestner, M., Appenroth, K.-J. 2008. Physiological responses of *Juncus effusus* (rush) to chromium and relevance for wastewater treatment in constructed wetlands. *International Journal of Phytoremediation* 10 (2), 79-90
- Wiessner, A., Kuschk, P., Jechorek, M., Seidel, H., Kästner, M. 2008. Sulphur transformation and deposition in the rhizosphere of *Juncus effusus* in a laboratory-scale constructed wetland. *Environmental Pollution* 155 (1), 125-131

- Paredes, D., Kuschik, P., Köser, H. 2007. Influence of plants and organic matter on the nitrogen removal in laboratory-scale model subsurface flow constructed wetlands inoculated with anaerobic ammonium oxidizing bacteria. *Eng. Life Sci.* 7(6), 565-576
- Gonzalias, A.E., Kuschik, P., Wiessner, A., Jank, M., Kästner, M., Köser, H. 2007. Treatment of artificial sulphide containing wastewater in subsurface horizontal flow laboratory-scale constructed wetlands. *Ecological Engineering* 31, 259-268
- Münch, Ch., Neu, T., Kuschik, P., Röske, I. 2007. The root surface as the definitive detail for microbial transformation processes in constructed wetlands – a biofilm characteristic. *Water Science and Technology* 56(3), 271-276
- Braeckevelt, M., Rokadia, H., Mirschel, G., Weber, S., Imfeld, G., Stelzer, N., Kuschik, P., Kästner, M., Richnow, H.H. 2007. Biodegradation of chlorobenzene in a constructed wetland treating contaminated groundwater. *Water Science and Technology* 56(3), 57-62
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- Wand, H., Vacca, G., Kuschik, P., Krüger, M., Kästner, M. 2007. Removal of bacteria by filtration in planted and non-planted sand columns. *Water Research* 41(1), 159-167
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