

New catalytic materials for the decomposition of trace pollutants

The variety of trace substances from chemical, pharmaceutical and biological applications as well as from private users reaching sewage and the environment is alarming. Examples of such trace pollutants are Bisphenol A in plastics, the active pharmaceutical ingredients of Ibuprofen, Diclofenac and Paracetamol, the hormone-like substance ethinylestradiol, as well as halogen-containing flame retardants. Common procedures of sewage treatment, such as the established methods based on mechanical and biological treatment are not capable of eliminating trace pollutants with satisfactory results. Even applying ozone or Activated Carbon filtration is shown to be not sufficient. Hence, the primary task within this situation is to develop a modular concept to approach specific treatment properties of trace pollutants, also in order to save high investment and operating costs.

The joint project CeraFe+, now receiving public funding by the German Federal Ministry of Education and Research (BMBF), addresses the current limitations. Within a cooperation of three SME's, an University and a federal research institute, novel macroporous materials based on ceramic carriers and exhibiting catalytic surface activity will be developed. The approach to the solution of the problem is based on the generation of new materials with intelligent surfaces, which can technically be incorporated into modules for sewage treatment plants. Such materials do have surfaces with heterogenic oxidative activity and allow the combination with biocatalytic processes, thereby providing the possibility to efficiently attack and decompose a broad variety of trace pollutants.



*Clean water – Protection of an essential resource by novel ceramic materials with catalytic activity for the elimination of organic trace pollutants
(source: KI Keramik-Institut GmbH)*



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