

# Reducing Energy Consumption of Milk Industry – and More

Savings Bank Foundation and KIT Grant Environmental Awards to Five Young Scientists

The Sparkassen-Stiftung (Savings Bank Foundation) grants EUR 2000 each to five young scientists of Karlsruhe Institute of Technology (KIT) for their excellent work. The Board of Management of the Sparkasse Karlsruhe Ettlingen and the Presidential Committee of KIT will hand over the awards during a ceremony on Wednesday, May 23, 2012, 17 hrs, at the Allgemeines Verfügungsgebäude on KIT Campus South (Ade-nauerring 20, building 50.41, rooms 145/146).

Dr. Karsten Köhler is granted the award for his Ph.D. thesis “Simultaneous Emulsification and Mixing” written at the Institute of Process Engineering in Life Sciences. Typical examples of emulsions are milk and milk products, sauces, creams, dyes, and medicine. Such emulsions are usually produced by high-pressure homogenization. Karsten Köhler has optimized this process by combining the two central steps of emulsification and mixing. As a result of simultaneous emulsification and mixing (SEM technique), it can be done without two mixing steps in milk processing, for instance. This reduces energy consumption of the complete process by more than 90%. Moreover, addition of emulsifiers can be reduced when producing cosmetics, for example. Emulsifiers are suspected to sensitize the human organism and to cause allergies.

In his diploma thesis, geoecologist Andreas Holbach analyzed the migration of fish in the South African Kosi Bay, an area, where the fish are encountered in coastal lakes, estuaries of rivers, and the open sea. Holbach found that the different geochemical properties of these water bodies are reflected by the lime layers of fish otoliths. On this basis, migration of the fish can be studied.

Hail-relevant general weather situations in an ensemble of regional climate models were studied by Marie Luise Kapsch. In Germany, thunderstorms are associated with a high damage potential. In summer in particular, they are often accompanied by strong rain,

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squalls or hail. In her diploma thesis, the meteorologist found that regional climate models reproduce weather situations sufficiently well for long-term analyses. Application of various statistical methods allows to estimate future developments of damage-prone thunderstorms.

The chemist Mark Pfeifle studied the reaction mechanism of isoprene oxidation in his diploma thesis. Isoprene is a hydrocarbon compound. Large amounts of this compound are emitted by plants into the atmosphere. Isoprene oxidation produces nitrogen dioxide (NO<sub>2</sub>) that enhances the formation of ozone. Detailed analysis of chemical and physical processes in the atmosphere helps better assess the factors responsible for maintaining or enhancing air quality.

The diploma thesis of the architect Franziska Fischer focused on sustainable planning for the new special development zone of about 460 square kilometers in the Indian city of Hyderabad. Her planning considers ecological aspects, integrates living spaces for various groups of population, and allows for reacting to a dynamic development. Social mixing, i.e. the consideration of variable needs, living conditions, and environments, was in the center of her thesis.

The environmental award is granted by the Savings Bank Foundation for both excellent scientific work and projects for the benefit of the public in the broadest sense and the solution of environmental problems. The departments can propose Ph.D. and diploma theses, project studies, and other student projects.

**Karlsruhe Institute of Technology (KIT) is a public corporation according to the legislation of the state of Baden-Württemberg. It fulfills the mission of a university and the mission of a national research center of the Helmholtz Association. KIT focuses on a knowledge triangle that links the tasks of research, teaching, and innovation.**

This press release is available on the internet at [www.kit.edu](http://www.kit.edu).