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Research and Education Cooperation GREEN CHEMISTRY

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Green Chemistry @ Sparkling Science

Chemistry smokes and stinks – there is hardly another physical science possessing an equally bad reputation than chemistry. This is in marked contrast to the impact of this discipline on our society during the past century. Just consider the ample diversity of novel materials surrounding each of us every single day from breakfast table via the interior of your car to our clothes; or think about the manifold of drugs available in your pharmacy store around the corner capable to cure life-threatening diseases of the past such as the plague, leprosy, or tuberculosis without much effort, today. Novel developments in modern synthetic chemistry contribute to improving the image of chemistry by applying new technologies which offer the prospect of sustainable and environmentally benign production processes.

This project aims at inspiring high school students by the concept of “green chemistry”; it offers a prospect to contribute to recent and ongoing research activities at Vienna University of Technology in order to increase the interest of pupils for physical sciences in general and for chemistry in particular. This requires a comprehensive program as offered by this consortium consisting of laboratory experiments, interpretation of data, compilation of reports and ultimately communication of results and background information. In addition, this initiative also includes teachers by offering a cooperative high level training for dedicated students as well as by providing material on state-of-the-art research topics for teaching purposes. Participating students will have the opportunity to communicate their work and the research discipline in general to a large audience by using traditional (attending conferences) as well as novel approaches (blogs, interactive web-pages, etc.). Individual projects will be set up in a way to include several research teams to offer inter-disciplinary and cooperative supervision.

During the pilot phase of this program, established contacts to partnering schools will be strengthened in order to allow for maximum impact based on previous experiences with summer student internships (in particular including higher technical schools). In addition, this initiative aims at making new contacts in particular with grammar schools to increase the numbers of pupils interested in physical sciences; this should also provide a better understanding of educational perspectives at university level.

Currently ongoing research projects include highly diverse topics such as development of novel luminant materials, production of bio-fuels, optimization of new materials for tissue engineering, development of drug candidates for regenerative treatments, or studies on potential fungal toxins in food.



Green Chemistry @ Sparkling Science

As one of the first programs of the last Sparkling Science call, the initiative „Green Chemistry @ Sparkling Science” was launched already in summer 2008 with an intensive training period at Vienna University of Technology. A large diversity of research projects was offered to interested students, and hands-on experiments were conducted at the university campus during the summer. In the following study year compilation and interpretation of the obtained data was implemented resulting in the compilation of research reports and “Fachbereichsarbeiten”. The following research areas were successfully investigated:

- ★ Alternative energy forms and modern chemical reactors
- ★ Renewable resources and biomaterials
- ★ Bioorganic chemistry and white biotechnology
- ★ Modern catalysis
- ★ Chemistry in food safety and environmental chemistry
- ★ Alternative reaction environments

Currently, research activities at Vienna University of Technology include professors and assistants of the whole Faculty for Technical Chemistry together with 15 partnering schools in Vienna and the provinces. In summer 2008 and during the following term approx. 25 students received training at the campus and were supervised during the elaboration of their results; we expect about 50 candidates for the second project year. Concomitantly, negotiations with additional schools are ongoing to enter the consortium.

Experiences so far are highly positive and the young scientists are highly motivated to obtain first rank expertise within an internationally recognized research environment. This is particularly reflected by responses from the participating students:

“I have appreciated the project very much, since I had some problems to fully comprehend the discipline of Technical Chemistry. With this experience, my future commitment to study chemistry has been confirmed.” (Martin Wieser, BRG Villach, Carinthia)

“It was a most interesting and informative experience which we will remember for a long time.” (Hans-Peter Karl and Bernhard Klösch, HTL Rosensteingasse, Vienna)

