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Report of the 1st AcadeMiC Summer School for 'Metrology in Chemistry', held in Rogaška Slatina, Slovenia (6–9 July 2005)

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Measurement science (i.e. metrology) is a prerequisite for assuring the quality of measurement results. Quality issues are nowadays considered to be of the highest importance because of the challenges of increased legislation and regulation. The need for measurement quality in order to make a correct decision based on the results of analytical measurements is increasing significantly in routine work, industrial processes, legislative work and scientific research. Nonetheless, there is a general lack of knowledge of metrology among research staff, laboratory practitioners, laboratory managers and legal experts. A European Commission financed platform for training of current practitioners in the chemistry sector has proven useful for over 2,000 people since 2001 [1]. However, it is of major importance that professionals receive such knowledge and training during their higher education studies before they enter the job market. This is the particular issue of AcadeMiC (**Academic: Metrology in Chemistry**).

The idea of AcadeMiC originated in 2002 at the European Commission Joint Research Center (EC-DG-JRC) in Geel, the Institute for Reference Materials and Measurements (IRMM) [2]. From the beginning, the vision of AcadeMiC was to foster the advancement of education in 'Metrology in Chemistry' and related topics (e.g. method validation, traceability, measurement uncertainty, quality control and quality assurance); that is to teach students the generic measurement issues that are addressed in the standard ISO/IEC-17025: general requirements for the competence of testing and calibration laboratories. The implementation of this idea requires a forum, where people and organizations lecturing/training in these topics meet, exchange skills, share experience and materials and develop a common curriculum in order to ensure the same level of knowledge throughout Europe.

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The main scope of AcadeMiC is to increase the quality of:

- Universities' curricula by providing up-to-date courses on Metrology in Chemistry
- Graduate students by providing optimum education and training
- Laboratories by having access to highly competent staff
- Scientific research by providing data with appropriate quality

1st AcadeMiC summer school programme

The result of this initiative was the first AcadeMiC summer school, held in Rogaška Slatina (Slovenia), 6–9 July 2005 organized by IRMM and EURACHEM. In total, 49 invited participants, predominantly academics involved in lecturing analytical chemistry at European Universities, from 21 European countries joined the meeting. The event was opened by Prof. Jure Zupan, Minister of Higher Education, Science and Technology of the Republic of Slovenia, who emphasized the importance of quality measurements and of networking between universities.

The technical session was opened by Dr. Philip Taylor of IRMM and Prof. Dr. Wolfhard Wegscheider, Rector of the University of Leoben, Austria, and Chairman of EURACHEM. The opening speech by P. Taylor outlined the vision and scope of the summer school:

...to create a European forum, where analytical chemistry lecturers can meet and share ideas and skills in teaching Metrology in Chemistry, in promoting it to students and getting support from funding/decision bodies. The vision of AcadeMiC is a common training program in the field of Metrology in Chemistry at a higher education level...

The objectives of the summer school were to:

- Stimulate exchange of ideas
- Raise awareness of current regulatory and societal needs
- Seek a common knowledge in Metrology in Chemistry
- Share experiences in teaching Metrology in Chemistry
- Provide strategies to market the course to students
- Discuss strategies to establish the course within universities

Some of the issues discussed at the summer school included:

- What are the needs related to Metrology in Chemistry and which topics should be included in higher education?
- What is the added value of a Metrology in Chemistry curriculum?
- How can a Metrology in Chemistry curriculum be established within Europe?

The programme was built around three sessions. The first session of the summer school consisted of introductory lectures to ensure a common understanding. The second session was focused on practical examples of how to teach Metrology in Chemistry. The major topic of the third and last session raised the question of 'how to promote and sell Metrology in Chemistry courses to funding/university bodies and to students'. The lectures and success stories were a great source of inspiration, as shown in the subsequent enthusiastic and proactive working group discussions.

Conclusion

The most important outcome of the meeting was the consensus that there is an urgent need to implement topics on metrology in the curricula of European universities and a common strategy (represented by AcadeMiC) is needed and appreciated. The need for a EURO curriculum was stressed. A proposal will be submitted for discussion at the next AcadeMiC event scheduled for spring 2007.

The following major needs and wishes were identified as a result of the Rogaška meeting and form the basis of future work:

- Setting up of a curriculum and definition of the topics which need to be covered
- Providing a 'Rogaška Declaration' to be signed by the participants and important EU stakeholder organizations that stresses the importance of education in this field and suggests a possible curriculum
- Setting up of a shareware platform of teaching material in order to harmonize 'Metrology in Chemistry' curricula
- Development of attractive and proactive teaching strategies
- Definition and development of concise implementation strategies
- Coordination of a harmonized and collaborative implementation strategy in the European Higher Education Area and dissemination of results

More detailed information about this summer school and future events and the ongoing process in AcadeMiC (as well as the 'Rogaška Declaration') will be found at the AcadeMiC homepage which will be available soon via the TrainMiC homepage [1]. The website will facilitate wide participation within the academic community and other interested parties.

References

1. IRMM (2006) TrainMiC. <http://www.trainmic.org>
2. Bulska E, Taylor P (2003) *Anal Bioanal Chem* 377:588–589