

**Final conference of the European
Chemistry Thematic Network 4 Project:
“Chemistry and the Bologna Process –
Current Status and Future Needs”**

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Theme: **Bologna Process Stocktaking**

Opening speech by

Professor Dr. Margret Wintermantel

President of the German Rectors' Conference at the
European conference

supported by the European Chemistry Thematic Network,
the German Rectors' Conference, the Technical University
Dresden and the German Academic Exchange Service

TU Dresden

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Dear Professor Smith,
Dear Vice-Rector,
Dear Colleagues,
Ladies and Gentlemen,

Next year, according to the Europe's Ministers of Education, the European Higher Education Area is to become a reality. This was expressed on June 18, 1999 in the Bologna Declaration. Upon its signing ten years ago, the **Bologna Process** was initiated, which the Federal Republic of Germany as one of 29 European countries committed to. However, for the European Higher Education Area, and thus for the higher education institutions in Europe, "Bologna" has become a symbol for fundamental change through structural adaptation in higher education, despite – or perhaps due to – the voluntary nature of this process and all the national differences.

In the next minutes, please, allow me to discuss with you three closely related questions:

1. What does "Bologna" mean for the German higher education institutions?
2. What have been the essential results in implementing "Bologna so far"?
3. What has to be done beyond 2010?

Chemistry, in my view, is an instructive example for all those achievements, challenges and future priorities in the frame of the Bologna-Process.

1.

From the perspective of German higher education institutions, we can look back on 10 years of an unprecedented reform process. Since then, a number of reforms have been implemented or at least initiated at the national level. Moreover, in cooperation with the state (federal state and Länder) and the societal "stakeholders", such as the participating institutions of higher education, students, employers, and employee representatives, the Bologna "label" developed into a comprehensive modernisation of study programmes and stands for internationally comparable university degrees.

2.

In many respects, positive results have already been achieved, such as in the areas of study structure reform and quality assurance. However, some fundamental goals of the Bologna Process – for example, with respect to cross-border academic mobility or the mutual recognition of study degrees and achievements – have not yet been reached. This stems to a great extent from the legal, organisational and financial barriers as well as from differences of opinion and from opposition the

reforms have met. And now in turn, this hinders the implementation and acceptance of the reform.

From the outset, the German institutions of higher education have viewed the study reforms derived from the Bologna Process as the strategic focus of their realignment efforts. They have made the goals of the process their own. For “Bologna” is necessarily linked with greater room for manoeuvre and more responsibility for the institutions themselves. An example of this is the academic quality assurance system of accreditation, which replaces the general examination regulations and simplifies the admission process. But this needs to be developed further and consistently.

What’s more, the universities understand these Bologna goals as an opportunity to internationalise their study programmes in a common European Higher Education Area, and to introduce necessary reforms that have long been discussed in the national context. In Germany, the process has expanded from a reform for increasing international mobility to a comprehensive reform of study and teaching that will improve the quality of study programmes profoundly.

So what have we achieved up to now with regard to the reform of the German study programmes in

general and how does Chemistry fit into the pattern of German Bologna implementation?

The German higher education institutions have transformed most study programmes to the tiered structure. According to the statistical data of the German Rectors' Conference, they offered more than 5,300 Bachelor and 4,200 Master degree programmes in the current summer semester. As a result, the new study programmes make up 76% of the entire study offering from German higher education institutions. The universities have transformed over 72% of their entire and extensive programme offering; at the Universities of Applied Sciences, it is even 95%. Regarding the number of students in the academic year 2007/2008 (these are the most current numbers of the Federal Statistics Office), this means that well over 30% of all students are matriculated in the tiered degree programmes. The share of beginning students (that is, in the first semester of a study programme) who are in Bachelor or Master programmes has even reached 65%.

Students of Chemistry and Management and Chemistry are serving as **examples of good practice** here. 85% of beginning students at universities matriculated in one of the new Bachelor Degree Programmes in 2008. In Biochemistry and Life Sciences, it was 81%. At the

Universities of Applied Sciences, 97% of new students of Chemistry and Chemical Engineering matriculated in Bachelor degree programmes.

This demonstrates, ladies and gentlemen, that the implementation of the Bologna Process has come a long way at German higher education institutions and especially in chemistry. The higher education institutions have taken on substantial responsibility; they are completing an enormous task, not to mention in addition to their ongoing "everyday business" and in the framework of a largely underfinanced teaching capacity without additional funding. We now have an enormous opportunity to provide Europe with a generation of highly qualified, academically trained higher education graduates, but to do that, we need support.

3.

Today, it is no longer a question of the success of the implementation, which is well underway. Aside from this, universities face a new challenge, which has been clearly recognized by the German Rectors' Conference in last January. After the (initial) phase of a largely structural reform, universities now need to adjust their study programmes in a manner that is more consistently oriented towards the individual student's competence building and towards the demands and the opportunities posed by a changing labour market. This also requires that we

further develop study courses with respect to the growing number and increasing diversity of students in an international perspective. Access to higher education has to become more transparent and open, suitable for a student body composed of national and international students, individuals with "traditional" and non-traditional, diverse educational biographies. All of these tasks need to be encompassed in the internal and external quality assurance of a higher education institution. Ultimately, the new possibilities offered to students by these reforms in higher education need to be communicated in order for them to truly take effect. Consequently, the year 2010 – instead of being a target as originally envisioned – will only be a stepping stone on the way to a common European Higher Education Area (EHEA). The questions of how to keep the reform process going after 2010 on a European-wide basis and what the substance of the process should be will not only remain strongly relevant. They will be decisive in determining how efficiently and comprehensively the European Higher Education Area can be accomplished.

In Chemistry, corresponding steps have already been taken as early as in 2000 by joining the European-wide TUNING-Projects. As a result from that, subject-specific learning outcomes and competences as well as level cycle descriptors have

ben developed. The project likewise addressed Workload and ECTS, methods of learning, teaching and assessment as well as quality enhancement, and it produced a list of Subject Specific Competences. The project pursues as its main goal the creation of a reference framework for learning outcomes that should be attained by graduates of the first and second cycles. In the area of chemistry, a cross-border, European path has been taken early on through the TUNING-Project. This has resulted in, for example, the "Eurobachelor" and "Euromaster", which will significantly promote comparability and thus mutual trust as well as student mobility.

As a result, there is but one step forward to be done: It still needs to be accepted and implemented by the faculties of Chemistry in the Bologna member countries!

The Tuning-Project also discussed the issue of employability in the area of chemistry. In some countries, including Germany, graduates of chemistry often leave the university with a doctoral degree and there is essentially no tradition of three to four-year study programmes that are relevant to the labour market. But the Tuning project is convinced that the European labour market also needs graduates from the first cycle. The particular profile of higher education studies – that is, science-based and research-oriented from the

outset – implies for students already at the Bachelor-level to acquire knowledge of the relevant methods and key competences, of course always coupled with subject-related academic qualifications. Future employers highly value that.

At the end of the day, the quality of the graduates in their professions provides the best possible argument for the high competitiveness of the entire Higher Education Area. That is why high quality in teaching, which also address employability, is such an important issue – for companies that rely upon a good higher education of their future specialists and leaders, and for students, whose market value and professional opportunities depend so much on those subject-related key competences, and, finally, also for the higher education institutions themselves, whose reputation increasingly will be determined by their quality of teaching.

The responsibility for providing graduates with the competences required for their later profession lies primarily with the higher education institutions. They need and receive support from the private and business sectors, which enter into dynamic partnerships with the higher education institutions. Representatives of companies are welcome to assist and consult when new degree programmes are being designed; they provide feedback on the

competences they need and their expectations of recent graduates seeking career entry.

Despite the good cooperation between companies and higher education institutions, in many subjects – including Chemistry – the new Bachelor degree is still being met with a great deal of mistrust. What is a young graduate with “only” a three- or four-year degree really capable of? Which profession can she or he enter? Are we going to lose quality on account of the new tiered study structure? This is a challenge to all of us, academics as well as employers. We all must act as ambassadors to convince the others of the newly established bachelor degrees! Though I would pose the question here: Is this a purely German discussion? Or how is it viewed in the rest of Europe? These are important questions that are sure to be discussed later on in the conference.

We have been well aware for a long time now that not every job or career requires a five-year or even longer higher education. That – for one reason – is why we need more flexible study offerings. The new bachelor degree offers opportunities for further education in an area outside of chemistry in the master phase such as in business or law, and thus the opportunity to qualify in two disciplines.

With a Bachelor, graduates can also try to enter the labour market after three or four years. In order to make this innovation a success and to counteract prejudices against Bachelor degrees, companies should become familiarised with the new degrees promptly and thoroughly, also to help them design career options accordingly. The graduates of Bachelor degree programmes bring with them the academic, methodical and personal skills needed for acclimating to a variety of working environments within a short period. Particularly for smaller and mid-sized companies, they represent highly suitable prospective employees with substantial potential for development.

The Bachelor degree is not a consolation prize. It is a high quality model for more professional diversity. But it will depend on the employers to provide for career perspectives as well as for their necessary continuing education. I think we will be hearing more about this later today.

Ladies and Gentlemen, I am very pleased that so many participants from higher education institutions, representatives from quality assurance and the business sector from across Europe and beyond have gathered here for the conclusion of this project on "Chemistry in the European Higher Education Area". The education of students is a

permanent challenge for all of us and, on the path to the future, a task that we can only accomplish together.

Thank you for your kind attention!