



ERA-CT-2003-510192

***ERA-Chemistry***

Implementation of Joint Bottom-up European Programmes in Chemistry

COORDINATION ACTION

ERA-NET

**Publishable Final Activity Report**

Period covered: from 1 January 2004  
to 31 December 2008

Date of preparation: November 2009

Start date of project: 1 January 2004

Duration: 5 years

Project coordinator name: Dr. Karlheinz Schmidt / Dr. Markus Behnke

Project coordinator organisation name: Deutsche Forschungsgemeinschaft, Germany

## **Publishable Final Activity Report**

### **Aims and scope**

The large number of excellent researchers is one of the most important strengths of the European Research Area (ERA). Looking at the European funding landscape these researchers are faced with substantial mutual incompatibilities of the different national funding systems all over Europe.

Scientists want to interchange their ideas and they want to implement their projects irrespective of national frontiers. But the national research funding bodies are not yet sufficiently prepared and equipped to administrate trans-national cooperation. Incompatible terminologies, procedures, research philosophies and funding parameters restrict the administration of trans-national research programmes and projects. Moreover, in times of reduced research budgets there is a deplorable tendency to give higher priority to purely national projects. It would be the wrong strategy to look for supranational solutions of trans-national matters. Supranational organisations usually privilege big networks with a large number of partners. In many cases this does not meet the requirements and needs of individual scientists. This is in particular true for most collaborating groups in fundamental chemical research where chemists prefer smaller networks with a high degree of scientific impact.

Chemistry is an international science with many trans-national activities. There is an increasing importance of chemical research at the interfaces to other research fields and a large degree of interaction between fundamental, curiosity-driven studies and more applied areas like biomedical and materials research. Europe exhibits quite a complex picture of funding programmes and instruments in chemistry in the different member states. Nevertheless, the national funding bodies are still the driving force for fundamental research in Europe and their contribution to the total yearly budget for fundamental research in the European Research Area (ERA) can be estimated with about 95% of the total budget. As a matter of fact, funding opportunities for fundamental research in chemistry for joint projects on European level are rather limited. So far these projects have been only barely supported within the past and the present framework programmes.

*ERA-Chemistry* was funded within the framework of the ERA-NET scheme of FP 6. It aimed at improving the coherence and coordination across Europe of research programmes and projects considering the research field chemistry as a representative example. In order to attain this goal, the *ERA-Chemistry* consortium envisaged the establishment of an ERA in curiosity-driven chemical research (basic and applied chemistry including chemistry-based trans-disciplinary projects) without noticeable national, formal and research subject boundaries. Like this it would allow national systems to solve problems collectively that they would not have been able to tackle independently. *ERA-Chemistry* has also started resolving the responsibilities of R&D ministries and national research councils at the interface between science-driven and industry-initiated research yet to be settled.

All of the following main *ERA-Chemistry* goals have been successfully reached within the last five years:

- Setting up a common information system on reviewing and funding chemical research (including chemistry-based trans-disciplinary research) in all European countries.
- Providing simple, effective and jointly agreed processing and evaluation schemes for trans-national proposals.
- Setting up electronic infrastructure facilities for trans-national communication and for submitting and reviewing trans-national proposals.
- Ascertaining innovative research fields particularly suitable for trans-national research efforts.
- Encouraging chemists across Europe to combine their complementary expertise in joint trans-national projects.
- Incorporating research funding organisations from new EU countries into the network by elaborating application and funding strategies to allow variable speeds of integration.
- Coordinating suitable activities with neighbouring ERA-NETs and with national key actors in applied research.
- Developing and implementing sustainable joint European research programmes in chemistry in all degrees of complexity, including joint management of these programmes.
- Increasing the competitiveness of chemical researchers in Europe by developing and implementing a truly integrated European research conference scheme (*Flash Conferences*).
- Launching trans-national thematic calls with fixed budgets and deadlines.
- Launching trans-national **open calls** in all fields of chemical research.
- Providing a framework for jointly agreed, earmarked/commonly financed chemistry-based trans-national research programmes and projects.

During its funding period *ERA-Chemistry* has been especially concentrating on:

- Developing optimised tools for the common evaluation and joint/common financing of trans-national proposals including common pot schemes.
- Establishing a high level Scientific Advisory Board (SAB) for all scientific activities (calls, workshops, research conferences).
- Developing flexible solutions for the rapid integration of research funding organisations/institutions from new EU countries (and from other partners not yet participating in the network) into all *ERA-Chemistry* activities.
- Analysing existing conferences and developing a new and tailor-made European research conference scheme for chemical research and neighbouring disciplines.
- Intensifying the cooperation with other ERA-NETs, with the *Technology Platform Sustainable Chemistry (SusChem)*, with key actors in applied chemical research and with European bodies in charge of chemical research.
- Initiating joint or complementary research funding activities at the interface between science-driven and industry-oriented chemical research.
- Preparing open calls for proposals without strict thematic and deadline fixation in the long term.

## Membership

As of 1 April 2006, the ten charter members of *ERA-Chemistry* and the Irish Research Council for Science, Engineering and Technology (IRCSET)<sup>1</sup> have been joined by the Hungarian Academy of Sciences (HAS)<sup>2</sup>, by the Institute of Organic Chemistry of the Polish Academy of Sciences (ICHO PAN) and by the Polish Ministry of Science and Higher Education (MSHE), bringing the total number of full consortium members to fourteen. In 2007 the network was further strengthened by the Polish Centre for Research (NCBiR)<sup>3</sup> as associated partner. The network partners represented national research councils (or national funding organisations), national academies and national ministries in charge of funding science-oriented basic and applied chemical research. All consortium members were key players in curiosity-driven chemistry in their respective countries, thus representing the large majority of funding resources for non-industrial chemical research in Europe and mobilising the critical mass necessary for success.

*ERA-Chemistry* comprised as for 2005 the following partners:

| Research council / funding agency  | Short name | Country     |
|--|------------|-------------|
| Deutsche Forschungsgemeinschaft  | DFG        | Germany     |
| Centre National de la Recherche Scientifique   | CNRS       | France      |
| Nederlandse Organisatie voor Wetenschappelijk Onderzoek  | NWO        | Netherlands |
| Fonds voor Wetenschappelijk Onderzoek – Vlaanderen   | FWO        | Belgium     |
| Fonds National de la Recherche Scientifique  | FNRS       | Belgium     |
| Ministerio de Ciencia e Innovación <sup>4</sup>  | MICNN      | Spain       |
| Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung                                     | SNF        | Switzerland |
| Fonds zur Förderung der wissenschaftlichen Forschung   | FWF        | Austria     |
| Fundação para a Ciência e a Tecnologia   | FCT        | Portugal    |
| Suomen Akatemia (Academy of Finland)   | AKA        | Finland     |
| Irish Research Council for Science, Engineering and Technology   | IRCSET     | Ireland     |
| Magyar Tudományos Akadémia (Hungarian Academy of Sciences)   | HAS        | Hungary     |
| Instytut Chemii – Organicznej, Polska Akademia Nauk (Institute of Organic Chemistry, Polish Academy of Sciences) | ICHO PAN   | Poland      |
| Ministerstwo Nauki i Szkolnictwa Wyższego (Ministry of Science and Higher Education)                             | MSHE       | Poland      |

<sup>1</sup> The amendment request to add the Irish IRCSET as contractor was accepted by the Commission on 21 December 2005. As of 1 January 2006, IRCSET was fully incorporated into the network.

<sup>2</sup> HAS also represents OTKA (*Országos Tudományos Kutatási Alapprogramok*, National Scientific Research Fund).

<sup>3</sup> Narodowe Centrum Badań i Rozwoju (NCBiR)

<sup>4</sup> Former Ministerio de Educación y Ciencia (MEC)

Furthermore, the “Chairmen and Directors of European Research Councils Chemistry Committees” (**CERC3**)<sup>5</sup> currently comprising representatives from 17 European countries as full members and from another three European countries as associated members were closely connected to the *ERA-Chemistry* network. CERC3 is composed of eminent chemical researchers who have been nominated by their national European research councils and of programme directors in charge of chemistry funding in these countries. The CERC3 chairperson is an *ex officio* member of the *ERA-Chemistry* Networking Steering Committee; the *ERA-Chemistry* coordinator is *ex officio* member of CERC3. Seven national research funding organisations from the Czech Republic, Estonia, Italy, Luxembourg, Slovenia, Sweden, and the United Kingdom are associated to *ERA-Chemistry*, six of them via CERC3. The Luxembourgian Fonds National de la Recherche (FNR) is associated by a special supplementary agreement by the Joint Secretariat of *ERA-Chemistry*. The emergence of CERC3 as a network of research councils in chemistry in 1990 is a unique initiative that for a long time has not been replicated in other disciplines. The first pilot of trans-national funding in chemistry was the four calls launched by CERC3, the first one in 1999 (seven projects, 2.5M €), the second in 2001 with the participation of CNRS and DFG (29 projects, 7.5M €) and the last two in 2002 (13 projects, 4.7M €). It should be mentioned that there is a long tradition of the research community in chemistry of networking national funding with their peers on the basis of bilateral or trilateral agreements and to a lesser extent in European networks as in other themes or disciplines.

Thus, *ERA-Chemistry*'s operational basis comprised up to today 21 national research funding organisations in charge of curiosity-driven chemical research from 19 European countries. Moreover, *ERA-Chemistry* has initiated a division of labour with neighbouring ERA-NETs and with key actors in applied research. Associated partners were not funded from the EU but participated in all *ERA-Chemistry* activities, provided that they accepted the *ERA-Chemistry* regulations.

The acting persons of *ERA-Chemistry* were programme directors with administrative competence and responsibility for funding research and related postgraduate training in chemistry. Some of them had a double function as university professors and research council administrators working in close cooperation with their respective research councils.

### **Coordinator and project management**

The *ERA-Chemistry* Coordinator Dr. Karlheinz Schmidt, Head of the Chemistry and Process Engineering Division of the *Deutsche Forschungsgemeinschaft* (DFG), Germany passed away on 4 March 2008. Dr. Markus Behnke (DFG) took over the role of the Coordinator in autumn 2007.

The *ERA-Chemistry* Joint Secretariat in Bonn and Paris was run by Kathrin Kohs (DFG) ([kathrin.kohs@dfg.de](mailto:kathrin.kohs@dfg.de)), Benoît Dardelet (CNRS) ([benoit.dardelet@cnrs-dir.fr](mailto:benoit.dardelet@cnrs-dir.fr)), and Dr. Markus Behnke (DFG) ([markus.behnke@dfg.de](mailto:markus.behnke@dfg.de)) as cooperation partners with a clear division of labour. The Joint Secretariat was strongly supported by Dr.-Ing. Georg Bechtold (DFG) ([georg.bechtold@dfg.de](mailto:georg.bechtold@dfg.de)) who was in charge of all financial affairs. The *ERA-Chemistry* webmaster is Dr. Edwin Bouman ([Edwin.Bouman@nwo.nl](mailto:Edwin.Bouman@nwo.nl)).

The ERA-NET Executive Board consisted of Dr. Reinhard Belocky and Dr. Bettina Löscher (FWF) Austria, Dr. Louis Vertegaal (NWO) The Netherlands (coordinator of ACENET-ERA-NET), Prof. Marek Chmielewski (ICHO PAN), Prof. Jean-Pierre Vairon (CNRS) France, of the *ERA-Chemistry* Coordinator and of the Joint Secretariat.

---

<sup>5</sup> For details see [www.cerc3.net](http://www.cerc3.net)

## Work performed, results achieved

During its funding period from 2004 to 2008, ERA-Chemistry has been collecting and benchmarking information on national evaluation and funding procedures, research priorities and best practices in chemical research in order to develop suitable common rules for administration, evaluation and funding of trans-national proposals. Today's state-of-the-art research in chemistry significantly influences other disciplines, and is frequently considered to be the origin of all molecular sciences. ERA-Chemistry notably took into account the increasing importance of chemical research at the interfaces to other research fields. As of 1 January 2006, it has extended the scientific scope of its status quo and benchmarking surveys to neighbouring disciplines closely related to chemistry (physics, biology, materials science, including applied research), in order to develop, implement and establish new initiatives for trans-national trans-disciplinary chemistry-based research. Prior to the implementation of thematic ERA-Chemistry funding programmes, researchers were asked to express their own wishes and expectations for these programmes. As a result a more active dialogue of researchers and programme managers was stimulated.

The first **ERA-Chemistry call** entitled "Hierarchically organised chemical structures: From molecules to hybrid materials" was launched in June 2005. The implemented call procedure was a result of a substantiated analysis of the existing funding programmes in Europe. Like this, existing barriers between funding bodies could be lowered, which resulted in suitable procedure for the collaborating organisations. By considering the experiences of this first call, the common rules for administration, evaluation and funding of trans-national proposals have been optimised and the draft for an improved Memorandum of Understanding (MoU) between the funding bodies for this call has been prepared.

The second **ERA-Chemistry call** entitled "Chemical activation of methane and carbon dioxide" was disseminated in March 2007. There was a huge benefit from the experience gathered by the consortium within the first call. The budget was increased and the funding scheme turned out to be even more flexible according to the Partners needs and national requirements. The second call was backed up by an open trans-national funding scheme for small joint projects without thematic restriction ("**Open Initiative**").

*ERA-Chemistry* has explicitly decided against defining specific scientific subjects *a priori*. Supported by its high level SAB and in an ongoing dynamic process, it chose current hot topics to define innovative chemistry-related research fields instead. As a precondition topics have been carefully chosen to serve the needs for trans-national thematic calls as well as for joint workshops of researchers and programme managers and for a new type of research conferences (Flash Conferences).

The scientific topics of the Flash Conferences were:

- "Molecules at the interface – from single molecule to functional assembly"
- "Catalysis without metals"
- "Carbohydrates at the Interfaces of Biology, Medicine and Materials Science"
- "Modern chemical techniques for light harvesting"

The scientific topics of the workshops were:

- Hierarchically organised chemical structures: from supramolecularity to hybrid materials"
- "Stereo-controlled chemistry related to the solution of major biological problems"
- "Chemical approaches to diseases of poverty"
- "Chemistry of raw material change; chemical transformation of biomass"

Ultimately, all these approaches are expected to strengthen the ERA in chemistry and should last well beyond the funding of *the ERA-Chemistry* network itself constituting the chemical bonds of the ERA.

### ***ERA-Chemistry: Resumé***

*ERA-Chemistry* is looking back at five years of very successful activities under FP 6 such as:

- *ERA-Chemistry* exploring and benchmarking of the funding landscape in Europe
- *ERA-Chemistry* “Open Initiative”
- *ERA-Chemistry* thematic calls for proposals
- *ERA-Chemistry* Flash Conferences
- *ERA-Chemistry* Workshops.

Trans-national **thematic calls** for proposals are powerful funding programmes, but they restrict the diversity of research items and thus often discriminate against smaller countries. *ERA-Chemistry* managed to overcome these deficiencies by complementing the thematic calls with the “Open Initiative”. The European Research Council (ERC) and other European funding bodies foster researchers solely by competition. After two successful thematic calls the *ERA-Chemistry* network started to fill this gap in 2008 by explicitly supporting cooperative research projects of excellent chemists from different European countries provided that they prove their trans-national complementarities of expertise.

Europe has a large number of top-notch chemists and a high potential of well-educated young researchers. The *ERA-Chemistry Flash Conference* scheme substantially increased the visibility of many particularly young European chemists throughout the world since 2007 until today.

### ***ERA-Chemistry beyond 2008 – a sustainable approach***

Faced with a limited time span of 5 years of support by the European Commission the partners went quite early in a planning phase to come up with strategies for a durable network labelled *ERA-Chemistry* even after 2008. Although, *ERA-Chemistry* was given the opportunity by the European Commission to submit a new proposal within FP 7, it seemed evident that a more sustainable solution was needed for durable actions. There was agreement among the partners on more effective and less bureaucratic management structures in order to serve the needs of the scientific community in Europe in an even more efficient way. In the end of 2008 *ERA-Chemistry* got the approval to be one of the most advanced ERA-NETs in Europe. The financial support of the EC led to quite a variety of ongoing joint funding programmes, new events as research conferences and finally a much clearer picture of the European Research Area in chemistry could be drawn.

Following careful considerations the *ERA-Chemistry* consortium decided to continue the successful work without applying for fresh money within FP 7. As a consequence the *ERA-Chemistry* partners will currently not submit a new ERA-NET proposal to the European Commission (EC). This decision does not affect an ERA-NET Plus proposal, which is acknowledged by the partners as an appropriate instrument and not just for topping-up the total budget of a future thematic call for proposals.

The approval of the EC and the constructive partnership to the EC with the aim of shaping the ERA in chemistry are very important to all *ERA-Chemistry* partners. The *ERA-Chemistry* consortium decided to continue with its fruitful activities beyond 2008 and reconsidered the structure of the network, the content of the Work Packages (WP) and the future responsibilities and obligations of each partner. It was jointly decided that the main working areas of the network shall be the “Open Initiative”, the continuation of a thematic call with the option to be implemented as ERA-NET Plus, the *ERA-Chemistry* Flash Conferences, and further improvement of the *ERA-Chemistry* website and the electronic tools for the administration of calls for proposals. Besides these operational activities and the coordination of the network, the partners will also put more emphasis on strategies, foresights and visions

for a durable and more visible European Research Area in Chemistry. For the near future it is planned to align the previous activities of *ERA-Chemistry* and CERC3 under a new umbrella with the label *ERA-Chemistry*. The optimised structure of this network will consist of the close interaction of operational, strategic and scientific subunits and their respective committees. Details will be defined in an anticipated *ERA-Chemistry* Consortium Agreement (CA) for the Partners.

There are different networks and single funding bodies today in Europe concentrating on thematic calls and scientists learned how to adapt to the given topics. In contrast *ERA-Chemistry's* "Open Initiative" has to be seen as a complementary and unique programme to give scientists the highest degree of flexibility without any thematic restrictions. Open funding programmes are a *unique selling point* when it comes to synergy effects between the different experts in their different fields of research in Europe. The "Open Initiative" of *ERA-Chemistry* could confirm this and it will be an even more important tool in the near future to strengthen the European Research Area in competition with competing areas on the international research landscape. More flexible joint funding instruments like the "Open Initiative" play also an important role in the urgently needed optimised collaboration between European funding bodies. An additional advantage of the "Open Initiative" is that an immense number of bilateral agreements between the funding bodies are not necessary. The "Open Initiative" has already reached the status of a continuous programme. In 2009, the second call was launched with the intention of an annual edition.

In practice this programme helped as an incentive and as a pilot to progress the ERA towards a European Research Grant Union. Building on schemes like "Money follows Researcher" and "Money follows Cooperation Line" (for the time being only applied by the so-called D-A-CH association representing three research funding organisations of Germany (DFG), Austria (FWF) and Switzerland (SNF)) and the newly established "Lead Agency-procedure".<sup>6</sup> As a matter of fact these procedures are already a solid cornerstone of the ERA for these organisations in their daily work and can be seen as a showcase for an ERA of the future in support of curiosity driven research.

### ***ERA-Chemistry* logo**



***ERA-Chemistry* website: [www.erachemistry.net](http://www.erachemistry.net)**

---

<sup>6</sup> An advanced procedure for the optimised and less time consuming administration of joint applications with one Lead-Agency (only one of the involved research funding organisations) in charge of the administration of the joint proposal.



## Project objectives and major achievements 2004-2008

*ERA-Chemistry* aimed at establishing the ERA in curiosity-driven chemical research (basic and applied chemistry including trans-disciplinary projects) without noticeable national, formal and research subject boundaries by the following 12 **objectives** (revised and extended as of 1 January 2006):

- Setting-up a common information system on reviewing and funding chemical research (including chemistry-based trans-disciplinary research) in all European countries **(objective 1)**.
- Providing simple, effective and jointly agreed processing and evaluation schemes for all kinds of joint trans-national proposals **(objective 2)**.
- Ascertaining innovative research fields which are particularly suitable for trans-national research efforts and encouraging European chemists to initiate and reinforce trans-national co-operation in joint research projects with high European added value **(objective 3)**.
- Setting-up of joint trans-national electronic infrastructure facilities for trans-national communication and for submitting and reviewing trans-national proposals **(objective 4)**.
- Developing and implementing durable bottom-up joint European research programmes in chemistry in all degrees of complexity, including joint management of these programmes **(objective 5)**.
- Providing a framework for national research councils to align part of their resources into chemistry-based trans-national research programmes **(objective 6)**.
- Developing new and efficient tools for the joint/common financing of proposals and programmes **(objective 7)**.
- Developing flexible solutions for the rapid integration of research funding organisations/institutions from new EU countries into all *ERA-Chemistry* activities **(objective 8)**.
- Developing and implementing a tailor-made European research conference scheme in chemistry (Flash Conferences) **(objective 9)**.
- Cooperation with other ERA-NETs, with the *Technology Platform Sustainable Chemistry*, with key actors in applied chemical research and with European bodies in charge of chemical research **(objective 10)**.
- Initiating joint or complementary research funding activities at the interface between science-driven and industry-oriented chemical research **(objective 11)**.
- Launching open calls for proposals without strict thematic and deadline fixation **(objective 12)**.

The setting-up of a common information system on reviewing and funding (**objective 1**) is the pre-requisite for providing processing and evaluation schemes (**objective 2**), whereas objective 2 is one out of two pre-conditions for developing and implementing joint research programmes (**objective 5**), which just as much requires the ascertaining of suitable research fields and the encouragement of European chemists to think more European (**objective 3**).

Setting up joint electronic communication tools and a professional website (objective 4) facilitates all other goals substantially, whereas objectives 6 (providing a framework for the alignment of national budget resources) and 7 (new tools for the joint/common financing) is of special importance for the realisation of an ERA in chemistry. Objective 8 (rapid integration of new EU countries) allows variable speeds of integration into the network by elaborating tailor-made application and funding strategies. Objective 9 (research conferences) will substantially increase the international visibility especially of young European chemists. The harmonisation of all *ERA-Chemistry* activities with those of other actors in chemical research on the European stage including industrial research is indispensable (objectives 10 and 11). Trans-national thematic calls for proposals are powerful funding tools, but they restrict the diversity of research items and thus often discriminate smaller countries. The most ambitious objective 12 will overcome these deficiencies by complementing the *ERA-Chemistry* thematic call scheme by an *open trans-national funding* scheme of small joint projects with mutually tuned financing.

To give an overview of the activities that has been implemented, the highlights and most relevant results of the funding period from January 2004 to December 2008 will be presented here.

## **1. Information on reviewing and funding of chemical research in Europe (objective 1)**

From the very beginning, *ERA-Chemistry* has been collecting and benchmarking information on national evaluation and funding procedures, research priorities and best practices in chemical research in order to develop suitable common rules for administration, evaluation and funding of trans-national proposals. As of 1 January 2006, *ERA-Chemistry* has extended its data collection on basic and applied chemistry to all new *ERA-Chemistry* partners. In addition, an updating of all findings compiled so far and an extension of the scientific scope of the status quo and benchmarking surveys to neighbouring disciplines closely related to chemistry (physics, biology, materials science, including applied research) was undertaken. All country-related information as well as the organisation's description presented in this report served two significant purposes:

- It provided a unique picture of the nature and procedures of chemistry-related science funding across the consortium partner organisations.
- It provided an inventory of the country-specific science structure relevant for chemistry-related science funding across the consortium partner countries.

Results of the questionnaire action were presented at the Dublin NSC Meeting on 20 October 2006. All results and benchmarking actions are available on the *ERA-Chemistry* website ([www.erachemistry.net](http://www.erachemistry.net)).

## **2. Providing processing and evaluation schemes for all kinds of joint trans-national proposals (objective 2)**

The **benchmarking** of the data collection mentioned above is an indispensable tool for the successful development and implementation of new initiatives for trans-national proposals in chemistry (including trans-disciplinary chemistry-based research). Another important tool is the **hosting of common workshops** of scientific administrators from research funding organisations and of researchers as their potential "customers". Thus, the scientific community got involved in the process of providing simple, effective and jointly agreed processing and evaluation schemes for joint trans-national proposals. Moreover, the advice of the best European chemists was collected concerning the improvement and coordination of procedures for cross-border calls for proposals (application, reviewing and funding) presently used by the partner research councils, together with their needs and suggestions for the progressive achievement of an integrated ERA in chemistry.

By taking into consideration the experiences of the first workshop series (“Hierarchically organised chemical structures: from supramolecularity to hybrid materials”) hosted in February 2005 in Mainz, Germany and the second workshop edition hosted at the *Universidad Autonoma* in Madrid, Spain (“Stereo-controlled chemistry related to the solution of major biological problems”) in March 2006, a third workshop (“Chemical approaches to diseases of poverty”) took place in November 2007 in Amsterdam, the Netherlands. These workshops took place with a common interface (overlap of half a day) between junior and senior researchers to initiate scientific discussions among the groups. At the same time this slot was used to have representatives of the European Commission present the latest news and developments (e.g. FP7 and ERA-NET Plus) which are of interest to both administrative and scientific communities. It was considered by many participants of the Madrid workshops that further editions of this type of workshops could be improved by concentrating essentially on scientific aspects. This idea was carefully implemented on the Amsterdam workshop and was taken into account for the initiation of forthcoming *ERA-Chemistry* Flash Conferences (See **objective 9**).

### 3. **Ascertaining innovative research fields (objective 3)**

Chemistry is a very dynamic science. It turned out in the past that many novel developments cannot be foreseen years before. From the very beginning, *ERA-Chemistry* has explicitly decided against concentrating on specific research subjects in chemistry *a priori*. Therefore, the timely ascertainment of innovative research fields suitable for all *ERA-Chemistry* activities is very important.

During the first two years of *ERA-Chemistry* an external Advisory Board was consulted to evaluate the network’s activities and for strategic advice. The board consisted of five high-level scientists and former programme directors in charge of national research funding in chemistry and familiar with all CERC3 matters. As of 2006, this board was supplemented by a Scientific Advisory Board (SAB) (a member list is given on [www.erachemistry.net](http://www.erachemistry.net)), which is composed of 15 active top-level European researchers. This new board played a key role in the discussions on appropriate scientific subjects for all projected *ERA-Chemistry* calls for proposals, workshops and the *Flash Conferences*. Moreover, possible individualistic interests with respect to the choice of research topics etc. were avoided. The SAB met once a year, but was informed on all network activities and decisions to guarantee good practice and high-quality involvement. All board members were nominated for the remaining duration of *ERA-Chemistry*, in order to achieve a permanent and long-term linkage between the scientific community and the consortium activities.

The **SAB Meetings** were hosted on 19 October 2006 in Dublin, Ireland on 10 October 2007 in Paris, France and on 15 September 2008 in Torino, Italy. Rather than proposing specific topics for each of the upcoming events, the advisors firstly collected a preliminary list of more than 40 topics, ideas or key words. In a second iteration step, they identified the most appropriate topics from the list to fit the demands of calls, workshops, or research conferences. The recommendations of the SAB were thoroughly discussed by the Network Steering Committee (NSC). It was emphasised that not all of the 40 subjects were real cutting-edge topics or dealt with new fields in fundamental research. Some of them appeared not to contribute substantially to bridge the gap between academic and applied research as proposed in the Description of Work (DoW). Moreover, it was important to avoid an overlap with actual CERC3 and COST activities.

The *ERA-Chemistry* consortium considered these aspects closely. It should be kept in mind that especially for thematic calls hot chemistry research topics from the applied point of view were identified as well, preferentially in co-operation with ACENET ERA-NET. Finally, the following research subjects were identified:

- First *ERA-Chemistry* Flash Conference “Molecules at the interface – from single molecule to functional assembly” (hosted in Autrans, France, 11 - 14 March 2007)

- Second *ERA-Chemistry* Flash Conference “Catalysis without metals” (hosted in Évora, Portugal, 28 - 30 October 2007).
- Third *ERA-Chemistry* Flash Conference “Carbohydrates at the Interfaces of Biology, Medicine and Materials Science” (hosted in Killarney, Ireland, 9 - 13 March, 2008).
- Fourth *ERA-Chemistry* Flash Conference “Modern chemical techniques for light harvesting” (hosted in El Escorial, Spain on 9 - 12 November 2008).
- First *ERA-Chemistry* call for proposals “Hierarchically organised chemical structures: From molecules to hybrid materials” in 2005.
- Second *ERA-Chemistry* call for proposals: “Chemical activation of methane and carbon dioxide” in 2007.
- *ERA-Chemistry* Workshop “Hierarchically organised chemical structures: from supramolecularity to hybrid materials” (hosted in Mainz, Germany, 14 - 19 February 2005).
- *ERA-Chemistry* Workshop “Stereo-controlled chemistry related to the solution of major biological problems” (hosted in Madrid, Spain, 13 - 15 March 2006).
- *ERA-Chemistry* Workshop: “Chemical approaches to diseases of poverty” (hosted in Amsterdam, The Netherlands, 30 November 2007).
- *ERA-Chemistry* Workshop “Chemistry of raw material change; chemical transformation of biomass” (hosted in Krakow, Poland, 13 - 16 April 2008).

#### 4. Electronic infrastructure facilities (objective 4)

The *ERA-Chemistry* website under the responsibility of NWO has been operational since April 2005 and was continuously improved and updated. In the meantime, all important *ERA-Chemistry* documents were made available electronically on the web. Work package leaders were enabled to edit pages on the website and update the contents of the pages concerning their work packages.

Within the Portuguese EU-Presidency, FCT managed to set up a new *ERA-Chemistry* web portal for the fourth *ERA-Chemistry* Flash Conference in Évora, Portugal. This web portal was available until December 2008 (month 60). Thus, until December 2008, two *ERA-Chemistry* websites were online ([www.erachemistry.net](http://www.erachemistry.net) and an event website ([www.erachemistryevents.net](http://www.erachemistryevents.net)). *ERA-Chemistry* aimed at a merge of the two websites in the beginning of 2009 to reduce costs and to keep the hosting and content management more simple.

The development of electronic communication tools and portals was within the general responsibility of the German DFG, which gathered many experiences with the processing and reviewing of trans-national proposals in the framework of CERC3 and of bilateral French-German calls, but a thorough revision and optimisation of all tools used so far proved to be indispensable. Within a next step a status quo analysis of existing systems at partner agencies (or otherwise available) was made.

Due to time constraints the first thematic call for proposals in 2005 was mainly administrated by the Joint Secretariat of *ERA-Chemistry* in a more conventional way (paper mail, electronic mailing). For the second call in 2007 the partners agreed to use an electronic system, similar to the one already implemented by the Irish partner IRCSET for *ERA-Chemistry* purposes (Contactor Quest Computing Ltd.). The system was modified according to *ERA-Chemistry*'s requirements. It was meant to be as simple as possible and it served its purpose for a thematic call perfectly. IRCSET in collaboration with DFG were in charge of the second thematic call for proposals. IRCSET hosted the system and it managed the centralised call secretariat.

Faced with different requirements for the first open call (“Open Initiative”) in 2008, the consortium decided to make use of an existing submission system of the new Hungarian partner HAS/OTKA. After modifications and further optimisation it is planned to make use of

the new system in the ongoing “Open Initiative” with the next time window for submitting proposals in the beginning of 2009.

## 5. Implementation of joint European research programmes in chemistry (objective 5)

The first **ERA-Chemistry** call for proposals on the topic “Hierarchically organised chemical structures: From molecules to hybrid materials” was disseminated on 1 June 2005. The Joint Secretariat received 78 eligible trans-national pre-proposals, which were sent to a group of 15 international (also non-European) reviewers, who provided their statements via electronic mail. The cooperation partners of the 35 most highly ranked pre-proposals were invited to submit full proposals, which were finally evaluated and ranked at a panel meeting of 15 international reviewers, all of them well recognised experts in their respective field. The funding decisions were prepared at an *ERA-Chemistry* NSC meeting on 9 December 2005 and confirmed on 15 December 2005, after successful negotiations among and within the NSC. The nine most highly ranked trans-national proposals received funding from the common pot, from earmarked national contributions according to the MoU and from additional national resources. In one case the “Money follows Co-operation Line” scheme was applied. The total funding budget for a funding period of three years,<sup>7</sup> starting in December 2005 / early 2006, was 3.3M €.

The participating partners were: Academy of Finland (AKA), Finland; Centre National de la Recherche Scientifique (CNRS), France; Deutsche Forschungsgemeinschaft (DFG), Germany; Fundação para a Ciência e a Tecnologia (FCT), Portugal; Fonds National de la Recherche Scientifique (FNRS), Belgium; Fonds zur Förderung der wissenschaftlichen Forschung (FWF), Austria; Irish Research Council for Science, Engineering and Technology (IRCSET), Ireland (not part of the consortium at the time of launching of the call, entered the consortium in 2006); Ministerio de Ciencia e Innovación (MICINN), Spain; Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO), The Netherlands; Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung (SNF), Switzerland.

To follow the aim of building up a high-quality research area in chemistry and in terms of lessons learnt in practise, it was clear to all partners that a critical survey of this first *ERA-Chemistry* call was needed. A task group in charge of the evaluation of the first call provided a list of recommendations. All of them were carefully considered for the design and further optimisation of the call procedure for the second thematic call:

- Focus on communication between partners
- A working group on the peer-review process
- A working group on the common pot
- An electronic portal
- Focus of the call
- A new MoU for every new call
- More transparent rules on selection / eligibility criteria
- Better involvement of all funding partners
- Analysis of existing data
- Improvement of cooperation between the awardees
- Lengthening of time schedule (increased by three months)
- Selection of the topic (a closer involvement of the SAB).

The second **ERA-Chemistry** call for proposals on the subject “Chemical activation of methane and carbon dioxide” was launched on 20 March 2007. The deadline for the submission of full proposals was 1 June 2007. The call procedure consisted again of a two-stage application and review process. The final funding decision was made in November

---

<sup>7</sup> The successful NWO applicants have a total funding period of 4 years.

2007. The total budget of this thematic call was of 5.46M € for three years (2008-2010). Funding started on 31 December 2007 - 01 April 2008. About 13 teams are currently financed by this call: this includes 28 researchers from 11 Partner countries.

In total 36 pre-proposals were submitted, which involved 79 applicants. With regard to the number of participants, the distribution reflected the size of the national scientific communities. Most applicants originated from the two large countries Germany and France, followed by United Kingdom, Spain and smaller countries. As a matter of fact the figures seem to reflect the overall development stages of the research communities in this specific field of chemistry as well as the number of researchers in each country working in the area of the call topic.

As far as the funding scheme is concerned, not all partners were able to contribute to a common pot. Therefore, an agreement of a mixed funding scheme was shaped: All partners agreed to fund their own national projects from national funds according their national requirements. In contrast to the first call, funds were not held in a "central bank account" for the duration of the call. Four partners (DFG, CNRS, EPSRC and IRCSET) agreed to participate in a common pot, contributing a specific percentage of their national budget earmarked for this call (mostly up to 50%). Only those partners contributing to the common pot did subsequently benefit from it. The allocation of common pot funds proved to be quite complex. Different scenarios based on a number of options based with various financial models were drawn. Finally, the participating partners agreed on a suitable model after the Amsterdam NSC meeting in 2007. The final agreement was made in early January 2008.

For the design of the second call attention was paid to the recommendations resulting from the first call. The outcome was a clear, more streamlined procedure and an efficient implementation.

Central coordination was carried out by IRCSET, acting as the Call Secretariat.

The recommendations arising from the first call were incorporated into the implementation of the second call. To provide a few examples:

- The time schedule was lengthened by 2.5 months, which allowed more time for the implementation.
- The SAB selected the call topic.
- An electronic portal was set up by the Call Secretariat to handle all aspects of the call process from pre-proposal submission through to the final full-proposal panel meeting.
- Discussion groups on the peer-review process and the common pot took place 2.5 months prior to the launch of the call and helped to formulate a policy in these areas which was incorporated in the new MoU (see below).
- A new detailed MoU was prepared for the call, which, for example, more clearly defined the selection / eligibility criteria.

The overall participating partners were: Centre National de la Recherche Scientifique (CNRS), France; Consiglio Nazionale delle Ricerche (CNR), Italy, associated; Deutsche Forschungsgemeinschaft (DFG), Germany; Engineering and Physical Sciences Research Council (EPSRC), United Kingdom, associated; Fundação para a Ciência e a Tecnologia (FCT), Portugal; Fonds National de la Recherche Scientifique (FNRS), Belgium; Fonds zur Förderung der wissenschaftlichen Forschung (FWF), Austria; Irish Research Council for Science, Engineering and Technology (IRCSET), Ireland; Instytut Chemii – Organicznej, Polska Akademia Nauk (ICHO PAN), Poland; Ministerio de Ciencia e Innovación (MICINN), Spain; Magyar Tudományos Akadémia (HAS), Hungary.

The network now benefits from an excellent model of how to launch and implement a thematic trans-national call.

In a next step, the establishment of a purely open, continuous trans-national funding call in chemistry without thematic restrictions was prepared. The lessons learned within the

thematic calls played an important role in the design of this novel tool. However, an important element has been implemented in the “Open Initiative”: the MoU was prepared with a variable geometry. As a result every partner was able to introduce proper constraints to the call in order to comply with internal national rules (see **objective 12**).

## **6. Joint alignment of financial resources into trans-national research programmes (**objective 6**)**

*ERA-Chemistry* proposed several tools towards joint research funding:

- The “Money Follows Researcher” scheme.
- The “Money Follows Co-operation Line” scheme.
- The alignment of part of the financial resources of the consortium partners for trans-national chemistry-based programmes and projects.

At the moment, the “Money follows Researcher” scheme has been implemented (partly in an exploratory way) in the *ERA-Chemistry* member councils DFG (Germany), FWF (Austria), NWO (The Netherlands), SNF (Switzerland) and in the associated council EPSRC (United Kingdom). Although the EUROHORCs (European Heads of Research Councils) disseminated this scheme and its implementation within their respective research funding structures in 2006, to the best of our knowledge, it cannot yet be implemented in most *ERA-Chemistry* councils and funding agencies because of considerable formal and legal obstacles. The “Money follows Co-operation Line” scheme (national funding of foreign researchers working abroad in specific cases), which is partly realised in the *ERA-Chemistry* member councils DFG, FWF, NWO and SNF, may also ease the administration of cross-border co-operation in the future. Moreover, some partner councils only provide individual funding (no programmes for individual grants) but almost exclusively as “institutional” funding (project-based or laboratory-based funding). Therefore, the “Money follows co-operation line” scheme appears to be more feasible for them than the “Money Follows Researcher” scheme.

In the course of preparing the first *ERA-Chemistry* call for proposals, it was recognised that *ERA-Chemistry* urgently needed efficient and flexible financial solutions for successfully ranked joint trans-national proposals. After intensive discussions at the Mainz workshops in 2005 between researchers and administrators and at the first *ERA-Chemistry Progress Meeting* (former name: *Evaluation Workshop*) in April 2005 in Leuven (Belgium), ten *ERA-Chemistry* consortium partners signed a MoU in which all partner councils agreed to secure an adequate amount of money to finance highly ranked proposals. Since a formula to calculate the national allocations to a joint or common budget has not yet been established, the earmarked amounts reflected the partners’ actual financial capacities (minimum amount per partner per year: 60,000 €). AKA (Finland), CNRS (France), DFG (Germany) and NWO (The Netherlands) put 50% of their earmarked budget into a common pot (no “juste retour”), to be managed by the *ERA-Chemistry* coordinator on a trust basis. The other partner councils earmarked adequate sums solely for their national applicants. The total earmarked budget for a three-year funding period was 3,210,000 €, one-third of which was put in a common-pot. It was decided to finance the most highly ranked proposals of the common pot partners from this common-pot. If this pot or the earmarked national budgets should not be sufficient to finance the highest level proposals, the partner councils promised to do their best to finance their applicants by increasing their national contributions and - if possible - by applying the “Money follows Co-operation Line” scheme. The partners contributing to a common pot agreed that this common pot should be managed by the coordinator on a trust basis. In order to facilitate the administrative procedures and to clarify the national responsibilities, all national applicants should be financed de facto by their respective research councils in consideration of national gross wages and funding guidelines. Therefore, the coordinator reallocated the funding contributions from the common pot to the partners involved.

It was recognised in 2006 that for forthcoming calls for proposals this funding concept needs improvement and optimisation, also with respect to different VAT, overhead costs and funding periods (deadlines) in many countries.

A reinforced continuation of this important *ERA-Chemistry* activity was urgently needed and implemented. Tailor-made solutions were developed for many national research funding bodies/ministries with small chemistry budgets or with no specific chemistry budgets at all. Moreover, the problem that in some European countries a contribution to a common-pot is legally not allowed required a system of variable speeds.

The *ERA-Chemistry* consortium decided to establish two working groups to propose suitable procedures for the second call for proposals in 2007 that was discussed on the Progress Meeting on 10 - 11 January 2007 in Lisbon, Portugal. The following groups were established:

- Working group on Funding: (Group Leader: DFG)
- Working group on Peer review: (Group Leader: IRCSET)

Both groups were advised to take into account the experiences of the first call and the results of the internal assessment of the call. A draft for an optimised MoU which considered also the recommendations of an *ERA-Chemistry* working group on baseline funding procedures (FWF, NWO, CNRS, IRCSET, HAS and DFG) was worked out.

## **7. Developing new and efficient tools for the joint/common financing of proposals and programmes (objective 7)**

The partners discussed the distribution of budget as an outcome of the first call for proposals at various meetings. It was noted that several partners had great benefit from the common pot whereas others lost a substantial amount of money they had paid into the common-pot. Furthermore, one of the partners had to spend considerably more money than initially earmarked. Georg Bechtold (DFG) presented a so-called “control loop approach” to determine the amount of money to be earmarked or to be put into the common-pot for each partner for forthcoming calls. This amount could be calculated by a formula taking into account the balance of each partner in past calls. Partners with many successful applicants in the past would have to increase their earmarked money or contribution to the common pot in the future, and vice-versa.

Taking into account the outcome of the financing of the first call, several possibilities were considered with regard to the preparation of the second call:

- Open funding: The partners commit themselves to finance all national applicants within the highest ranked proposals.
- “Nanoscience model” common pot: Each partner puts 25% of the earmarked budget into a common pot. First, the earmarked budget will be used up, then the money of the common-pot will be distributed. This procedure insures to avoid too small earmarked budgets.
- Model of the first *ERA-Chemistry* call with control loop applied to old participants.
- Pure model of the first *ERA-Chemistry* call.
- Earmarked money, but after the ranking there should be a negotiation component for the projects that cannot be funded by the national earmarked money.
- Inclusion of a rebuttal phase where applicants were sent the final reviews for comments and return before the final scientific panel meeting.

The new MoU draft was discussed at the Progress Meeting on 10 and 11 January in Lisbon. A suitable model for the second call was carefully considered. Again, only the most highly ranked proposals were financed.

All gathered experience of both thematic calls were evaluated and implemented as well within the “Open Initiative” (See objective 12).



## **8. Developing flexible solutions for the rapid integration of research funding organisations/institutions from new EU countries into all *ERA-Chemistry* activities (objective 8)**

The conditions for scientific research funding in many countries of the extended EU differ considerably from those of most “old” EU countries. Many new EU countries have not yet established research councils/funding agencies/ministries with a reliable research funding budget. Some of them are not yet eligible to participate in present programmes according to the EU regulations. In many new EU countries, the application, review and funding guidelines/procedures differ considerably from those of the present *ERA-Chemistry* member councils. Moreover, the financial capacities of the funding agencies of most new EU members are considerably restricted. All of these facts point to the need for provisional arrangements for tailor-made, special national regulations, with the aim of a stepwise integration of new partners into the network.

These facts are of special importance with respect to trans-national calls for proposals. According to the *ERA-Chemistry* philosophy, every researcher should have equal rights to apply for non-permanent personnel, equipment, consumables, travel expenses etc. Most research funding organisations/institutions in the new EU countries will have significant difficulties in implementing this general philosophy quickly. Therefore, the main aim of this action will be to investigate mechanisms for variable speeds of integration.

Fortunately, the negotiations with the Polish and Hungarian *ERA-Chemistry* partners with respect to their participation in the *ERA-Chemistry* calls for proposals were quite successful. Both partners participated successfully in the second *ERA-Chemistry* call as well as in the “Open Initiative” in 2008.

Special attention was paid to the integration of (new) European countries not yet actively participating in *ERA-Chemistry*. The *ERA-Chemistry* coordinator has started contacting SEE ERA-NET in charge of the integration of South-East European countries.

## **9. Tools for establishing a European research conference scheme in chemistry (Flash Conferences) (objective 9)**

*ERA-Chemistry* aimed at increasing the competitiveness of chemical researchers in Europe and sharpening their international profile by developing and implementing a tailor-made, truly integrated European research conference scheme. The famous Gordon conferences in the USA provide a forum for chemists, biologists and physicists through the organisation and support of scientific conferences on high level topics at site locations that encourage extensive discussions. So far ESF’s EURESCO conferences, initially seen as Europe’s version of the Gordon conferences, could not achieve the same aims as the original, for a variety of reasons. In 2003 EURESCO was turned down for funding by the EU, threatening its continuation. ESF’s research conferences are currently being revitalised.

After having made a careful benefit-deficiency-analysis of the Gordon, EURESCO and other research conference philosophies and modes of operation, *ERA-Chemistry* decided to inaugurate a new style of conferences in chemistry as of 2007. The *ERA-Chemistry Flash Conferences* have the following characteristics:

- They should be a forum for experienced and young researchers to discuss frontier chemical research. The scientific scope of these conferences will be concerned exclusively with emerging topics of immediate importance for developing chemical research: sharply defined domains at the forefront in Europe. The non-recurrent hot topics were proposed six months in advance by the members of the SAB.
- They are based on high-level lectures by invited internationally renowned specialists of the domain. Each person attending must, as far as possible, contribute to the

conference, so the poster presentations will be fully open, and the best proposals will be upgraded to “contributed” lectures.

- They are completely open to any researcher in the field, independent of age or nationality. Junior researchers are particularly welcomed to this new conference scheme. There is no registration fee: participants will have to cover their own travel and on-site accommodation expenses (which are as low as possible).
- There should be two *Flash Conferences* per year, in different European countries. These conferences were planned for three full days, on a single site for both the conferences and accommodation. The daily agenda is organised around morning lectures given by the invited speakers; the afternoon will be reserved for fruitful discussions or free activities, and the evening for the contributed lecturers.
- The audience is usually limited to 100-120 attendees, selected on the quality of their proposals by the chairpersons.

The first *ERA-Chemistry* Flash Conference was scheduled for 12 - 14 March 2007 in Autrans, France, followed by the second *ERA-Chemistry* Flash Conference in October in Evora, Portugal on October 28 to 1 November 2007. The third *ERA-Chemistry* Flash Conference took place in Killarney on 9 - 11 March 2008 followed by the fourth *ERA-Chemistry* Flash Conference in El Escorial, Spain on 9 - 11 November 2008. For the subjects see **objective 3**.

#### **10. Cooperation with other ERA-NETs, with key actors in applied chemical research, and with European bodies in charge of chemical research (objective 10)**

The first meeting of the *ERA-Chemistry* task group “Cooperation with CERC3 and other ERA-NETs” took place on occasion of the first European Chemistry Congress on 29 August 2006 in Budapest. The task group presently consists of representatives from the NSC, from CERC3, from various ERA-NETs and from key player organisations in the field of chemistry on European level (EuCheMS, COST, EFCE, CEFIC, SusChem). This meeting focussed primarily on a status analysis of the present situation followed by suggestions and requests of the working group considering improved collaborations and common actions to be undertaken among the above mentioned key player organisations.

It was stated that a revitalisation of the original AllChemE idea to give science driven *and* industry initiated chemistry and chemical engineering a single voice in Europe might be necessary, especially with respect to FP7 and ERC. Coordination and tuning of all activities of common interest could best be achieved either by a revitalisation of AllChemE with an improved/optimised mission statement or by choosing a new name.

The efforts of the task group and the so far achieved results were acknowledged by the NSC at its Dublin meeting on 20 October 2006. By establishing such a group one would have the ideal instrument to exchange information and to harmonise common activities wherever needed. The recent developments of a better alignment for the naming of chemistry related panels in the newly established ERC may serve as a good example of the successful collaboration of the corresponding key players in this group.

Support was given on the ACENET ERA-NET workshop “Applied Catalysis: The Key to European Prosperity and Sustainability”, in Lisbon, Portugal on 10 - 11 December 2007 (representation of *ERA-Chemistry* together with MICINN).

On a national level, *ERA-Chemistry* was represented by the Coordinator on the meetings of “German ERA-NET Coordinators” hosted by the Federal Ministry for Education and

Research (Projektträger DLR des BMBF) in Bonn, Germany. This meeting took place on a regular basis within the last four year and has been attended regularly.

#### **11. Initiating joint or complementary research funding activities at the interface between science-driven and industry-oriented chemical research (objective 11)**

It was stated at a working group meeting in Budapest in 2006 (see objective 10) that cooperation between *ERA-Chemistry* and the other chemistry-related ERA-NETs e.g. ACENET ERA-NET, ERA-IB and NanoSci-ERA is expressly encouraged and necessary. ACENET-ERA-NET and *ERA-Chemistry* had a good basis for intensified cooperation and common/complementary thematic initiatives and strategic actions. On the other hand, joint calls did not seem to be desirable at the moment (different time schedules and research priorities). It was recommended to establish a small joint working group on best practice (optimisation of review procedure) and on “common pot” regulations.

As mentioned above (objective 3), it should be kept in mind that for future calls hot topics in chemical research also from the applied point of view will be considered. The *ERA-Chemistry* Workshop on applied chemistry (topic: “Chemical approaches to diseases of poverty” in Amsterdam in November 2007) implemented this suggestion.

#### **12. Launching open calls for proposals without strict thematic and deadline fixation (objective 12)**

Trans-national thematic calls for proposals are powerful funding tools, but they restrict the diversity of research items and thus often discriminate smaller countries. *ERA-Chemistry* overcame these deficiencies by complementing the thematic calls by the “Open Initiative”. European chemists often regret that they are legally constrained or not encouraged to submit joint trans-national applications outside the scope of thematic calls. *ERA-Chemistry* faced the challenge and aimed at opening the opportunity for a partial abandonment of thematic and possibly also of deadline fixations. This refers to the *ERA-Chemistry* “dream” formulated at the Kick-off Meeting in Paris in May 2004: “All chemists should have the self-evident right to choose their cooperation partners anywhere in Europe and to submit commonly drafted, administrated and funded trans-national proposals on any scientific subject anytime”.

The concept was to ease the collaboration of chemists from different countries on small scale common projects (two to three partners) and to manage the administration, evaluation and funding for joint bottom-up projects in a more sophisticated way and with less bureaucracy that funding organisations require at the moment. The ideal situation for such a concept would be a more or less continuous filing and reviewing of a limited number of topical trans-national proposals to be financed from a common pot, but tailor-made for this kind of activity. Even though some consortium partners were not able to follow this idea from the very beginning, first steps towards this goal were very successful, e.g. by compromises with respect to the eligibility of applicants, to the size and the research subjects of applications, to deadlines, general funding conditions etc.

At the Dublin NSC Meeting on 20 October 2006, preparation has begun for the operation of continuous open calls in 2008. The partners acknowledged that some partners could not fund a thematic and an additional open call within the same year (2007). Therefore, the launch was considered for 2008 (announcement in 2007). The application and review procedures were handled according to national or jointly agreed rules.

Some concerns and wishes were expressed on possible boundary conditions for the “Open Initiative”:

- The number of applicants should be controlled by an appropriate procedure.
- Full freedom with respect to all conceivable research subjects in chemistry could be inadvisable.
- Possibly a special initiative for young researchers.
- The procedure should be flexible.

- Funding should be restricted to high quality research and clear trans-national added value.
- Different timeslots for the submission of proposals in different national funding organisations may be a major obstacle.

A working group headed by George Horvai (HAS) has worked out possibilities for the implementation of this concept among the *ERA-Chemistry* partner organisations. The feasibility has been debated by HAS, FWF and DFG at a Budapest meeting taking place on 21 May 2007 and on 5 - 7 February 2008. The aims were to collect possible application, review and funding schemes, to compare them under real conditions, to suggest a scheme that is accepted by the majority of the *ERA-Chemistry* partners and to test “good practice” principles with all Partners in a realistic environment. The analysis included a survey on already existing contracts and agreements between research funding organisations concerning small-scale cooperation projects. The *ERA-Chemistry* “Open Initiative” had and will have the following specifications:

- Every chemist in Europe who is eligible to be supported by the responsible national funding organisation is allowed to apply
- No pre-defined subject in curiosity-driven chemistry
- No deadline in the long term (one deadline will be set up for the second campaign in 2009. The partners intend to establish a continuous application system for future *ERA-Chemistry* „Open Initiatives“)
- Joint application from two applicants located in two different countries
- Joint review and joint decision process, carried out by the two funding partners involved
- No supranational body; the whole procedure will solely involve the participating national research councils
- No supranational funds (no „common pot“)

The implementation of such open calls was debated on the second *ERA-Chemistry* Flash Conference (30 October 2007) as well as on the Amsterdam Workshop (28 November 2007). From the report drafted by HAS, the long-term expectation was to set up a non-thematic, trans-national, virtually continuous call in basic chemistry research (“Open Initiative”). A MoU was duly signed by 31 March 2008. The “Open Initiative” was launched on 15 April 2008 including a submission period until 30 May 2008. On 13 June 2008, the formal check of pre-proposals was finished, reviewers have been selected by the partners and the portal has been opened for the reviewing. From the review board meeting in Vienna (29 September 2008), 41 project proposals selected in a pre-proposal round have already been submitted and are being reviewed for funding. The final funding decision will be made bilaterally from January 2009 to April 2009. The participating partners were:

Fonds zur Förderung der wissenschaftlichen Forschung (FWF), Austria; Deutsche Forschungsgemeinschaft e.V. (DFG), Germany; Országos Tudományos Kutatási Alapprogramok (OTKA), in collaboration with Magyar Tudományos Akadémia (HAS), Hungary; Irish Research Council for Science, Engineering and Technology (IRCSET), Ireland; Narodowe Centrum Badań i Rozwoju (NCBiR); Poland; Fundação para a Ciência e a Tecnologia (FCT), Portugal; Ministerio de Ciencia e Innovación (MICINN), Spain.

Following this pilot phase, a **second “Open Initiative”** is currently running among the *ERA-Chemistry* partners for 2009. A second revised MoU was signed aiming at the implementation of a trans-nationally organised system of simultaneous bilateral (in the future possibly also multilateral) funding programmes for curiosity-driven research in chemistry within the context of the *ERA-Chemistry* network. By February 2009, the partners will have agreed to disseminate this Initiative and to establish the application, review and funding procedures. The participating partners will be those of the first “Open Initiative”, including AKA.

There has been some improvement anticipating the second *ERA-Chemistry* “Open Initiative”, e.g.

- Every partner should set out the internal national guidelines for applicants on the national webpage.
- There should be clear indications that the applicants have to meet the formal requirements.
- There has to be at least one page of justification of budget.

The consortium is making use of an electronic submission and administration system for the “Open Initiative” (hosted by HAS / OTKA). The system is capable of handling all steps of the call process, including submission of applications, submission of reviews, panel meetings, rejection of unsuccessful pre-proposals, and invitation to submit full proposals. Each participating partner nominated a national contact point who would have access to the electronic portal in order to carry out eligibility checks.

All documents and forms concerning a common administration, evaluation and financing procedure were made available electronically to all partners. The joint electronic communication tools and portals serve as single entry points, in order to facilitate the interchange of information and the dissemination of results and to enable an effective joint processing of individual proposals and programmes.

#### **Cooperations with other programmes:**

This issue is mainly addressed by a dedicated task implemented in the *ERA-Chemistry* programme, Task 3.1 “Cooperation with CERC3, with other ERA-NETs and with Technology Platforms” (Task Leader DFG).

In order to optimise the relation between basic and applied chemistry the coordinator of *ERA-Chemistry* is a member of the Consultation Group of the sister ERA-NET on applied catalysis (ACENET-ERA-NET).

The exchange of experiences on the coordinator level is enforced by the regular meetings organised by the national contact office of the German Ministry for Education and Research (NKS, PT-DLR). *ERA-Chemistry* was in touch with the coordinators of numerous other ERA-NETs (e.g. CORNET, PATHOGENOMICS, EUROSYSBIO, RARE DISEASES, ERA-SAGE, BONUS, WORK-IN-NET).

Further meeting participations are given in “Annex – Plan for using and disseminating the knowledge” on the next page.

## Final Plan for using and disseminating the knowledge

### Dissemination of knowledge

*ERA-Chemistry* was present at various conferences and symposia in the field of chemistry, neighbouring disciplines and technology with oral contributions and at poster sessions. Moreover, the general public was informed in a series of contributions and articles in print media (e.g. NATURE). Besides facing the general public and being one of the first active ERA-NETs in FP6, *ERA-Chemistry* was invited to various meetings of other ERA-NETs and research funding organisations, where reports on ongoing activities of the network served as a show case and good practice example for further actions. Details are given in the table below.

### Overview table

| <b>Actual Dates</b>  | <b>Type</b>   | <b>Type of audience</b>                         | <b>Countries addressed</b> | <b>Size of audience</b> | <b>Partner responsible /involved</b> |
|----------------------|---|---|----------------------------|-------------------------|--------------------------------------|
| May 2004             | Science Week Exhibition <sup>8</sup>                      | General public                                  | Spain                      | 3.000                   | MEC                                  |
| May 2004             | Press release (Journal of CNRS)                           | General public                                  | France                     | 30.000                  | CNRS                                 |
| January 2005         | Direct e-mailing  | Directors of CNRS chemistry research units      | France                     | 300                     | CNRS                                 |
| February /April 2005 | Direct e-mailing <sup>9</sup>                             | University and Research Institute. Members      | Spain                      | 12.000                  | MEC                                  |
| April 2005           | Briefing on European Research Funding Instruments, KoWi * | Research Administrators                         | Germany                    | 70                      | DFG                                  |
| May 2005             | Conference "Task Force Group" European Mathematicians *   | Research administrators                         | European                   | 40                      | DFG                                  |
| June 2005            | Meeting / Presentation NSF, Washington *                  | Research administrators                         | USA                        | 15                      | DFG                                  |
| June 2005            | Publication <sup>10</sup>                                 | Spanish Chemists Association                    | Spain                      | 60.000                  | MEC                                  |
| June 2005            | Introduction of Sustainable Chemistry                     | Industry/University/ Research Institute. Madrid | Spain                      | 300                     | MEC                                  |

\* Invited talk / presentation

<sup>8</sup> Exhibition organised by the Madrid Community Government to inform the public on Science.

<sup>9</sup> Information on *ERA-Chemistry* sent by the Research General Direction of Madrid Government, published on web [www.madrimasd.org](http://www.madrimasd.org).

<sup>10</sup> Publication of the Spanish Chemists Association published every two months. *Química e Industria*, nº 559, 52, May-June 2005.

| Actual Dates                     | Type  | Type of audience                                 | Countries addressed   | Size of audience | Partner responsible /involved |
|----------------------------------|---|--|-----------------------|------------------|-------------------------------|
|                                  | <i>Technolog. Platform</i> <sup>11</sup>                                |  |                       |                  |                               |
| June 2005                        | Conference *  | National and regional research managers          | France                | 60               | CNRS                          |
| July 2005                        | Meeting at the Ministry for Education and Science (BMBF)<br>*           | Research administrators                          | Germany               | 40               | DFG                           |
| July 2005                        | Direct e-mailing <sup>12</sup>  | Researchers                                      | Spain                 | 3.000            | MEC                           |
| August 2005                      | IUPAC Congress Beijing <sup>13</sup>                                    | Research administrators                          | International         | 100-200          | DFG/CNRS/MEC                  |
| September 2005                   | Introduction of Sustainable Chemistry Technology Platform <sup>14</sup> | Industry/University/Research Institute Barcelona | Spain                 | 500              | MEC                           |
| September 2005                   | YES meeting / presentation, Krakow <sup>15</sup>                        | Young researchers                                | European              | 60               | CNRS                          |
| October 2005                     | Article (L'actualité chimique)  | Chemists and research managers                   | France                |                  | CNRS                          |
| November 2005                    | EXPOQUIMIA Congress <sup>16</sup>                                       | Industry/University                              | International         | 1.500            | MEC                           |
| November 2005                    | Publication   | Spanish Chemists Association                     | Spain                 | 15.000           | MEC                           |
| Since Nov. 2005 –regular updates | ERA-Chemistry recent and planned activities Website of CNRS             | Any  | France                |                  | CNRS                          |
| January 2006                     | CD ERA-CHEMISTRY Workshops Madrid                                       | Researchers                                      | ERA-Chemistry partner | 100              | CNRS-FCT                      |
| February 2006                    | Meeting / Presentation DFG, Bonn <sup>17</sup>                          | Research administrators                          | Germany, Belgium      | 6                | DFG, FNRS, FWO                |
| February 2006                    | 2 <sup>nd</sup> Annual Prime Conference,                                | Researchers                                      | European              | 300              | CNRS                          |

<sup>11</sup> Introduction of the Spanish Technology Platform of Sustainable Chemistry, held in Madrid in the Ministry of Industry, Tourism and Trade, 13 June 2005.

<sup>12</sup> Announcement of the *ERA-Chemistry* call for proposals.

\* Invited talk / presentation

<sup>13</sup> IUPAC Congress in Beijing. Workshop on research with a presentation on *ERA-Chemistry* (invited talk).

<sup>14</sup> Introduction of the Spanish Technology Platform of Sustainable Chemistry, to be held in Barcelona in the Ministry of Industry of the Catalans Government, 13 September 2005.

<sup>15</sup> Meeting of "Young European Scientists" in Krakow, invited talk on *ERA-Chemistry*, 13 – 18 September 2005.

<sup>16</sup> Expoquimia is an international Congress supported by the Spanish Chemical Industry and the Spanish and Catalan Governments. The Mediterranean International Congress is held at the same time and in the same places.

<sup>17</sup> Strategic meeting on the analysis of tools for cooperative funding schemes, 20 – 22 February 2006.

| Actual Dates  | Type   | Type of audience                            | Countries addressed | Size of audience   | Partner responsible /involved |
|---------------|--|---|---------------------|--------------------|-------------------------------|
|               | Paris <sup>18</sup>  |   |                     |                    |                               |
| March 2006    | Marin ERA Forum *  | Research administrators, EC representatives | European            | 35                 | DFG/CNRS                      |
| May 2006      | Annual CERC3 Meeting, Amsterdam *  | Research administrators, researcher         | European            | 120                | all                           |
| May 2006      | ACENET workshop <sup>19</sup> Bari, Italy  | Research administrators, researcher         | European            | 60                 | FCT, MEC, CNRS, NWO, FNRS     |
| August 2006   | Working group on European trans-national cooperation                                 | Administrators                              | International       | 30                 | DFG, HAS                      |
| June 2006     | Meeting RAN, Russian Academy of Sciences, Moscow *                                   | research administrators, researchers        | Russia, Germany     | 20                 | DFG                           |
| July 2006     | 41 <sup>st</sup> International Symposium on Macromolecules – IUPAC, Rio de Janeiro * | Researchers                                 | International       | 1.500              | CNRS                          |
| August 2006   | 1 <sup>st</sup> European Chemistry Congress Budapest <sup>20</sup>                   | Research administrators, researchers        | International       | 2000<br>15 (IUPAC) | DFG, HAS, CNRS, NWO, MEC      |
| November 2006 | 1 <sup>st</sup> Meeting Platform on IB related ERA-NETS *                            | Research administrators                     | European            | 30                 | DFG                           |
| January 2007  | Article <sup>21</sup>  | Researcher                                  | France              | 5.000              | CNRS                          |
| February 2007 | ASTRONET workshop, Hamburg *   | Research administrators, researchers        | European            | 15                 | DFG                           |
| March 2007    | ACS Spring Meeting, Chicago "Special Event Research Funding" *                       | Researchers                                 | International       | 150                | DFG                           |
| May 2007      | ERA-Net PRIME Policy Workshop *  | Research administrators, researchers        | European            | 50                 | DFG                           |
| June 2007     | ERA-NET MATERA Outlook Conference *  | Research administrators, researchers        | European            | 120                | DFG                           |
| October 2007  | EuCheMS General Assembly *   | Heads of Chemical Societies in Europe       | European            | 60                 | DFG                           |
| June 2008     | Article, Annual  | Researchers,                                | Germany             | 5000               | DFG                           |

<sup>18</sup> Invited talk on ERA-Chemistry.

<sup>19</sup> Workshop on potential collaborations between various research programmes and/or strategic research projects within the field of applied chemistry, 21 – 22 may, Bari, Italy.

\* Invited talk / presentation

<sup>20</sup> IUPAC task group meeting on international research funding, 27 – 31 August 2006.

<sup>21</sup> "1<sup>st</sup> ERA-Chemistry Flash Conference" published in Actualité Chimique, January 2007, No. 304, 46.



| Actual Dates          | Type   | Type of audience                   | Countries addressed  | Size of audience | Partner responsible /involved |
|-----------------------|--|------------------------------------|----------------------|------------------|-------------------------------|
|                       | <i>Report of DFG</i>   |                                    |                      |                  |                               |
| <i>September 2008</i> | <i>Platform Meeting SusChem *</i>  | <i>Researchers, Administrators</i> | <b>European</b>      | <i>120</i>       | <i>DFG</i>                    |
| <i>September 2008</i> | <i>Article in NATURE CHEMICAL BIOLOGY (Volume 4, Number 9, September 2008)</i> | <i>Researchers</i>                 | <b>International</b> | <i>10.000</i>    | <i>DFG</i>                    |
|                       |  |                                    |                      |                  |                               |

### **Publishable Results – Using the Knowledge**

The *ERA-Chemistry* consortium decided to continue with its fruitful activities beyond 2008 and reconsidered the structure of the network, the content of the Work Packages (WP) and the future responsibilities and obligations of each Partner. It was jointly decided that the main working areas of the network will be the “Open Initiative”, the *ERA-Chemistry* Flash Conferences, and further improvement of the *ERA-Chemistry* website and the electronic tools for the administration of calls for proposals.

<http://new.erachemistry.net/>

Having taken the decision for a continuation *ERA-Chemistry* established a new website in the end of 2008. The new website serves as the central tool for publishing results and disseminating the knowledge.

In the various sections (Activities, Call for Proposals, Publications, Meetings and Events) the website gives an overview of the history, ongoing and future activities of *ERA-Chemistry*. The section “Publications” presents a broad selection of reports and deliverables of the workpackages. Among them the famous country profiles that draw a concise picture of the European Research Area in Chemistry.

All results available for public access on the *ERA-Chemistry* can be published.