

EUROCORES Insight



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Dear reader,

I wish you a very warm welcome to the new EUROCORES INSIGHT No. 5.

Activities and developments over the last months are showing that the EUROCORES Scheme is going strong. Six new programme proposals have been developed out of the 38 submitted EUROCORES themes proposals, and we hope that many of them will be published in a few weeks. All these proposals show the high interest of the scientific community in and across all scientific domains to work together at a European level.

The publication of a second set of EUROCORES Calls for proposals this year marks one of the other achievements of this year, namely the implementation of the revised EUROCORES procedures which shorten the EUROCORES process by another three months.

Having achieved all this, now a number changes will take place for the EUROCORES Scheme from 2009 onwards. One major change is the end of the support of the EUROCORES Scheme by the EC contract and the successful transfer to a fully ESF Member Organisation owned EUROCORES Scheme.

This new start will also be reflected in having new faces at the EUROCORES Scheme Office. After almost ten years at the ESF and more than five years of very challenging and interesting work for the EUROCORES Scheme and working in close collaboration with many of you in the National Funding Organisations, I will leave the ESF. Stephanie Pery, my colleague in the Scheme Office will take up a new opportunity in the PESC Unit of the ESF, and finally also John Marks, our Director for Science and Strategy, will leave the ESF at the end of the year. The new EUROCORES Scheme Coordinator will be Farzam Ranjbaran who is very familiar with the Scheme, having coordinated EUROCORES programmes for more than three years.

We will use this issue of EUROCORES INSIGHT to provide you with the details of the most important developments in the second half of 2008 and the most interesting news and science stories from our EUROCORES Programmes. The latter encompass, for example, an insight into the exciting ocean drilling conducted in the EuroMARC programme. We can also read about about RNA, the transporter of genetic information within the cell, as well as about the CNCC Essay Prize, which recognises the emerging talents in the field of consciousness research. Moreover, both HumVIB, which is the first EUROCORES programme in the social sciences, and TOPO-EUROPE – the biggest EUROCORES programme so far – are featured. Finally, a number of programmes are reporting on their past networking events, which even include outreach activities like a schoolteachers' workshop on the global carbon cycle co-organised by EuroCLIMATE.

I hope you will enjoy this new issue of EUROCORES INSIGHT and wish you all the best for the future.

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EUROCORES Insight

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New EUROCORES Themes Selected

The 2008 Call for EUROCORES themes, which was published in March 2008 with a deadline of 2 June 2008, received 38 proposals for new EUROCORES themes. Following a thorough peer review process involving the ESF Standing Committees, the ESF Science Advisory Board and the ESF Governing Council, the following six new themes were selected to be developed into new EUROCORES programmes:

- **Maximizing the Impact of Graphene Research in Science and Innovation (EuroGRAPHENE)**
- **Ecological and evolutionary functional genomics (EuroEEFG)**
- **Synthetic Biology: Engineering Complex Biological Systems (EuroSYNBIO)**
- **European Comparisons in Regional Cohesion, Dynamics and Expressions (EuroCORECODE)**
- **Origin of the elements and nuclear history of the Universe (EuroGENESIS)**
- **European collaborative research on cooling in acute ischemic stroke (EuroCOOLS)**

The decision on the viability of the six new EUROCORES programmes will be taken in mid December and the new Calls for proposals are envisaged to be published on 19 December 2008.

In addition, the ESF Governing Council decided to develop the proposal “**Bio-inspired Engineering of Sensors, Actuators & Systems (EuroBioSAS)**”, which was originally proposed to be a pilot case for a TOP-CORES, into an additional EUROCORES programme.

For more information,
see www.esf.org/eurocores



Now It's Ours!

After more than five years support from the European Commission, the EUROCORES Scheme will, as of January 2009, go into full ownership of the ESF Member Organisations. The support by the European Commission has allowed the ESF to develop and establish the EUROCORES Scheme as a well working instrument for collaborative research programmes, including the development of calls for proposals with subsequent one or two-stage peer reviews, support for funding negotiations and subsequent networking and dissemination of the funded projects. Thus, added value for the science community and the National Funding Organisations involved has been created.

With the transition of the support for the coordination and networking from the Commission contract to the

support by the National Funding Organisations funding projects within a given EUROCORES programme, the ESF Member Organisations and their partner research organisations in the EUROCORES programmes are taking full ownership of the EUROCORES Scheme. This is also reflected in the adoption of the new “Terms of Participation in the EUROCORES Scheme” which will be obligatory for the future participation in any of the new EUROCORES programme. These terms define new roles for the Management Committees in the running of the EUROCORES programme and establish the EUROCORES Scheme Management Committee, which formalises the role of the meetings of the National Funding Organisations at the EUROCORES workshops and acknowledges the work achieved in these workshops over the past five years.

EUROCORES Scheme Workshop VI

The sixth EUROCORES workshop held on 8 and 9 September 2008 in Brussels was one of the most successful workshops of the EUROCORES Scheme. The workshop which was chaired by Marja Makarow, the ESF Chief Executive, brought together 37 representatives from 32 different National Funding Organisations including the US-NSF, as well as the European Commission.

The workshop was characterised by lively discussion of the participants. It reached conclusions on the major aspects of the EUROCORES Scheme. This include the level of contribution to the coordination and networking

costs for the EUROCORES Programmes, the new definitions of roles in the decision making in the future scheme and a regular review of the new system.

The most important agreements are summarised in the new "Terms of participation in the EUROCORES Scheme" which can be obtained from the ESF Office at www.esf.org/eurocores.



ESF Collaborative Research Tool Kit



One of the successful spins-offs of the EUROCORES Scheme is the ESF Collaborative Research Tool Kit. The Tool Kit was developed from the EUROCORES experiences of running more than 30 Calls for proposals but also from taking up experience gained in other ESF instruments such as ESF Research Networking Programmes, ESF Conferences, COST Action or EURYI Awards. The Tool Kit has been implemented for a first

pilot application for the EUROPOLAR ERA-NET and the implementation and running of their POLARCLIMATE Call for proposals. This call for proposals brought together 20 organisations from 18 countries and a total funding volume of about 10 Mio €. The call was published in September 2008 and received 38 pre-proposals which are currently being processed in a two-stage peer review. First funding for the selected projects is foreseen for the second half of 2009. Several more interested ERA-Nets are currently in discussion with the ESF Office for the further implementation of the Tool Kit.

**For more information,
please contact the ESF Office
at tool-kit@esf.org.**



EuroCLIMATE DVD Out!

For more information, see www.esf.org/euroclimate or contact Didier Hauglustaine at euroclimate@esf.org EuroCLIMATE Programme Coordinator



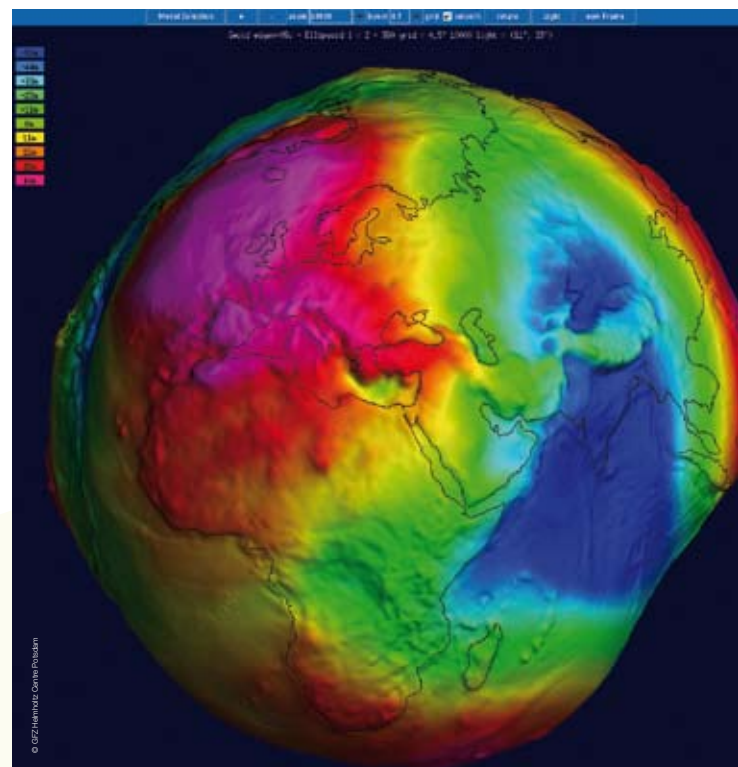
Understanding Europe's Topography

The EUROCORES programme TOPO-EUROPE kicks off

Europe's shape is in a constant change: The Mediterranean basin is shrinking, the Alps are rising and pushing North, and Scandinavia is still rebounding after having been crushed by the weight of a thick and huge ice sheet in the ice ages. But what did Europe look like in the past, what are the processes controlling all these changes and what has the future in store for us? And how does the topography influence the climate of Europe on geological time scales?

The EUROCORES programme TOPO-EUROPE (4-D Topography Evolution in Europe: Uplift, Subsidence and Sea Level Change) sets out to answer these questions and many more. So far the largest programme of the European Collaborative Research Scheme (EUROCORES) with 10 Collaborative Research Projects (CRPs) including 16 National Funding Organisations and an overall budget of approximately 15 million Euros, TOPO-EUROPE is a concerted action to observe and better understand the evolution of the continent in both space and time. The programme kicked off in El Escorial near Madrid in October 2008 during the fourth TOPO-EUROPE international workshop.

The TOPO-EUROPE programme is part of a European-wide network of the same name. The network was born in the International Lithosphere Programme (ILP) and developed as a regional research coordinating committee for Europe. "EUROCORES TOPO-EUROPE provides an important stimulus for realising the ambitions of the TOPO-EUROPE initiative at large" said Professor Sierd Cloetingh of Vrije Universiteit Amsterdam,



Shape of the Earth's Geoid after the EIGEN-05C – model



Kai Rankenburg, former TOPO-EUROPE Programme Coordinator and Sierd, chair of TOPO-EUROPE's scientific committee in El Escorial, Spain

President of the ILP and initiator of both the network and the programme. "The idea is to bring different segments of the European community together from the fields of deep Earth and surface processes and for exactly that EUROCORES is a good instrument" continued Cloetingh. TOPO-EUROPE is also the natural successor of EuroMARGINS, a completed EUROCORES programme on continental margins.

A selection of Europe's manifold natural laboratories is under investigation, ranging from orogens like the Pyrenees and the Alps via the Anatolian Plateau to the Scandinavian upland and the Mediterranean. The science in TOPO-EUROPE covers a wide spectrum of topics: inter alia, Earth crust and mantle dynamics, source-to-sink relationships and sediment dynamics, plateau formation and plate-reorganisation.

TOPO-EUROPE is highly interdisciplinary, pooling not only solid Earth experts but also coupling them with climate scientists. One of the programme's Collaborative Research Projects called TOPO-ALPS, for example, attempts to unravel the topographic history of the Alps and its tectonic and climatic drivers. "One of the foci in the current TOPO-EUROPE is to find ways to bring climate in, to determine what role this plays in tectonic and geomorphic problems. This is a frontier of science, so I expect to see more and more of this type of project in the future" explained Professor Sean Willet, the project leader of TOPO-ALPS and a geologist at ETH Zurich, Switzerland.

Another CRP called RESEL-GRACE looks into refining European sea level estimations by combining altimetry, tide gauges and other data with improved glacial isostatic adjustment modelling and tailored regional gravity field models that reflect the redistribution of water masses. "Most important now is to study the impacts of sea level rise and here hardly anything has been done" said Anny Cazenave of Centre National d'Etudes Spatiales (CNES) in Toulouse, France. "The rise, the sedimentology, the tectonics, ocean dynamics and climate need to be combined to develop models for the impacts" continued Cazenave, who is also a lead author of the Nobel prize-winning fourth IPCC report. In RESEL-GRACE, she will identify the most vulnerable ecosystems and economies such as the Nile Delta or

the Adriatic and assess the impacts of sea-level rise and concomitant risk of flooding case by case.

There are further applied aspects of the research undertaken in TOPO-EUROPE, which renders the results enormously interesting for the geological surveys of Europe. "A number of issues like geothermal energy, seismic hazards and slope instabilities require a know-how that goes beyond the national borders of Europe" said Cloetingh. New concepts are being developed but need to be validated at the same time with an array of different types of data in order to reach a better geo-prediction that could eventually save lives and protect property.

TOPO-EUROPE creates also new research opportunities by opening up 50 to 60 positions for young researchers. "If you don't offer opportunities, young people will not go into our field as they will



TOPO-EUROPE excursion in Spain's Central Range as part of the 4th TOPO-EUROPE Workshop, October 2008

have the impression that everything has been solved, that the field is classical" explained Cloetingh. With programmes like TOPO-EUROPE and by further modernising the science, a pool of researchers is created that is able to fill up the positions to become available in the years to come with the generation change. The interest in the Earth sciences is constantly increasing and statistics in terms of student, PhD and post-doc populations are promising. Even the proportion of women has reached 50 percent among students, which is a great success in a formerly extremely male-dominated discipline.

Next to the collaborations within the EUROCORES programme, a plentitude of synergies is envisaged since the programme is not a stand-alone. The TOPO-IBERIA Research Initiative and the EU EPOS-ESFRI programme will be important partners, and TOPO-EUROPE hopes to team up with the TOPO-Central Asia programme. The TOPO-EUROPE network is part of the ILP research agenda and hence paving the way for a global partnership in the Earth sciences.

**For more information, see
www.esf.org/topoeurope
 or contact Didier Hauglustaine
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 TOPO-EUROPE Programme Coordinator**



How My Country Influences My Behaviour

HumVIB, the first EURO-CORES programme in the social sciences, kicks off

Why do I cast my ballot on Election Day, or why do I choose to stay at home instead? What are the main factors influencing my decision? Human behaviour is not only determined at a personal level, but moulded by the social, political and economic context in each country and region. Differences in cultures, institutions, structures and practices help explain differing individual values, attitudes and behaviour across the population of Europe.

The new EUROCORES programme HumVIB sets out to answer these issues at a European level by undertaking a “Cross-national and Multi-level Analysis of Human Values, Institutions and Behaviour”. HumVIB is the first ever EUROCORES programme in the social sciences and an ambitious attempt to integrate this hitherto fragmented field. “This is a major innovation in the social sciences and for the ESF” said Richard Sinnott, Professor of Political Science at University College Dublin and the original proposer of the HumVIB theme. “The idea is to address a range of research questions using the strategy of connecting individual behaviour with the institutional context as the integrating device that unites the various components of the programme in a coherent whole” continued Sinnott.

Sinnott’s brainchild has led to a fully-fledged programme consisting of six Collaborative Research Projects (CRPs) involving scientists from 15 countries. Under the umbrella of the common research strategy, the projects are looking into voter turnout and abstention, welfare attitudes and the influence of the environment on people’s happiness. Moreover, the issue of gender inequality is addressed, as well as the question of why political representatives often do not reflect the views of their constituencies. “Europe serves as an excellent natural laboratory for this kind of study due to its enormous cultural, social, political and economic diversity,” said Sinnott.

The LIFETIMING CRP, for example, aims to explain variations in the views of Europeans on the organisation of the life course. The periods of life are in general predefined, but at what age a person is perceived as an “adult” or “old” depends on the cultural background and can vary by more than a decade! The timing of events in one’s life course, such as getting married or having children, is related to social norms, too. “We also want to find out to what extent people are really able to take initiative with regard to their own lives and consciously plan their future,” elaborated Professor Aat Liefbroer from Vrije Universiteit Amsterdam, the project leader of LIFETIMING and co-Chair with Richard Sinnott of HumVIB’s scientific committee. Showing that people might actually need to be facilitated in certain areas of structuring their lives could be a useful finding for policy-makers.

Many of the results to be obtained are expected to feed into policy-making, thus linking theory and practice. Examining how institutional frameworks foster gender inequalities, resulting in underrepresentation of women in leadership roles as well as in higher poverty rates among women,

can help in designing counter measures and eventually in bridging the gender gap. Similarly, voter turnout does matter, since stay-at-home citizens reduce the legitimacy of government. Understanding why people vote or abstain is a prerequisite for efficient voter mobilisation and ultimately for effective representation.

Without the establishment of the Descartes Prize-winning European Social Survey (ESS), which originated in an ESF activity and is also co-funded by the ESF, HumVIB would simply not be possible. This recent and fundamentally pan-European effort in the European social sciences is based on rigorous sampling and measurement and, crucially in this context, on the use of representative within-country samples in a sufficiently large number of countries. Additionally, data collection for the ESS is not restricted to individual-level information, but includes systematically collected data on events and developments during the fieldwork period as well as on the contextual characteristics of the countries involved. All of HumVIB’s projects will work with data from the ESS and take into account the explicit standards for research design and data collection that the ESS has set.

HumVIB is not a purely European endeavour but also encompasses North American scientists like Karen Jusko, assistant professor at Stanford University and one of the Principal Investigators in HumVIB’s VTAC project on voter turnout and abstention. “As I study developed democracies, the opportunity to develop a European network and work with the experts in each country is especially important to me” explained Jusko. “The National Science Foundation (NSF) is enormously supportive of HumVIB and has even encouraged me to incorporate extended visits at the institutions of my European collaborators into my research plans” continued Jusko.

With the HumVIB programme having just kicked off in a first meeting at University College Dublin (UCD) last October, the networking phase typical for all EUROCORES programmes has started. Apart from workshops and meetings for all HumVIB researchers, activities for young scientists such as summer schools are envisioned. “It’s especially important for the young people to receive training and build up their own network” said Liefbroer, who will play an active role in organising events for the younger generation. Furthermore, the HumVIB members will not only collaborate within the programme, but plan on linking up with important European data centres like the European Data Centre for Work and Welfare and other initiatives.

**For more information, see www.esf.org/humvib or contact Sarah Moore at humvib@esf.org
HumVIB Programme Coordinator**



Aat Liefbroer and Richard Sinnott, the two co-chairs of HumVIB’s scientific committee



Jelle Bijma on the Achievements of the EUROCORES Programme EuroCLIMATE



Jelle Bijma in the new EuroCLIMATE DVD

Professor Jelle Bijma, chair of the scientific committee of the EUROCORES programme EuroCLIMATE (Climate Variability & Past, Present & Future Carbon Cycle) speaks about the outcomes and benefits of the programme. Jelle Bijma is a biogeochemist at the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, Germany, and President of the European Geosciences Union (EGU) Biogeosciences Division.

Could you please briefly describe the EUROCORES programme EuroCLIMATE to us?

In general you could say that EuroCLIMATE has supported research related to the inter-relationship between global carbon cycle dynamics and climate variability of the past, present and future. However, each of the nine projects has dealt with very different aspects of this complex theme.

What do you consider the key achievements of EuroCLIMATE?

I think that each of the projects has managed to cover most of the deliverables that were initially set out. New proxies have been developed, the absolute chronology based on tree rings has been extended and coupled to ice-core archives. Most importantly, we have achieved that data producers and modellers are becoming good friends and that the contacts between the terrestrial and marine scientists have been firmly established.



EuroCLIMATE is a programme within the European Collaborative Research Scheme. What was the added value of the collaboration in EuroCLIMATE?

Some scientific issues need to be addressed at a scale which is beyond the scope of national funding levels because its socio-economic implications are global. Next to the EU Framework Programme, EUROCORES is the only alternative for doing research at a European scale. In my view, the EUROCORES Scheme a fantastic instrument that allows scientists to do research at the European level with relatively little administrative burden and a fantastic networking and outreach component.

How do you see the future in collaborative climate change research and how do you think ESF could be involved?

Climate scientists are not only driven by curiosity, but also by concerns about the fate of the Earth. This requires a global approach. The EUROCORES Scheme allows for a bottom-up approach where scientists can propose a programme that they think is important. This is the big difference with regard to the EU Framework Programme where calls are pre-formulated. For me, the natural extension of EuroCLIMATE would be a collaborative programme on ocean acidification.



Iceberg Lancaster Sound

Europe Cores in EUROCORES – Ocean Drilling in EuroMARC



All images: Work on DV/DP Hunter on the IODP Expedition 310 «Tahiti Sea Level»

The oceans are our climate regulators, cover the sites of fundamental geodynamic, geochemical and biological processes and have high-resolution records of the Earth's history in store for us. Scientific marine drilling and coring is crucial to cast light on both the deep and shallow (sub) seafloors to advance our knowledge in the Earth and environmental sciences.

The EUROCORES programme EuroMARC is an essential tool to boost European leadership in the planning of international marine coring expeditions and the preparation of IODP (Integrated Ocean Drilling Program) or IMAGES (International Marine Past Global Change Study) proposals. The programme consists of seven collaborative research projects with principal investigators from nine countries. The scientific focus is manifold: reconstructions of the meridional overturning circulation in both high and low latitudes and of the spatial and temporal structure of the interglacials peaks and demises are made using thick marine sediment sections. Fossil reef and carbonate mounds cores are extracted to reconstruct

sea-level and environmental changes. Current ocean dynamics and sediment fluxes are investigated with the help of sediment traps, and hydrothermal processes of deep biosphere at mid ocean ridges get explored. But how does coring work and what is actually done on the cruises? International marine coring expeditions are divided into several parts, the pre-, cruise and post-cruise activities. It's crucial to be a hundred percent prepared for the coring, which means to plan way ahead, starting with getting a slot on one of the few coring and drilling ships, obtaining territorial drilling permits, making sure all the required equipment is on board and getting a good scientific team together. "We had organisational meetings even before EuroMARC started" said Catherine Kissel from the French Atomic Energy Commission (CEA) in Gif-sur-Yvette, who was the chief scientist of the AMOCINT (Atlantic Meridional Overturning Circulation during Interglacials) cruise that took place this summer. The chief scientist is in charge of coordinating all the logistics and operations before and on the cruise, which even includes making sure that all the crew members pass their medical exam.

Often, a site survey cruise precedes the main cruise to identify the best spots for the actual coring and to get the drill sites approved by bodies like IODP. In order to map the topography of the seafloor, a multi-beam echo sounder system is used, which is like a fanlike beam covering a huge swath of the seafloor. Additionally, sediment penetrating systems are employed, which shoot signals with varying energy pulses and wave lengths that hit the bottom and are differently reflected depending on the density of the layers, thus giving a detailed impression of the layering of the sediments.

Besides the seismics, autonomous underwater vehicles are often used for more local surveys. "To make sure we won't damage any living ecosystem, we drop an underwater camera to see the nature of the seafloor just around the potential drilling site" explained Gilbert Camoin from CNRS in Aix-en-Provence, who is the chair of EuroMARC's scientific committee as well as the project leader of CHECREEF (The Last Deglacial Sea-Level and Climatic Changes) and investigates coral reefs in both Tahiti and the Great Barrier Reef. Especially in the case of coral reefs, the regulations for drilling are very strict and pictures are taken before and afterwards. "There is no impact at all, when you pull up the pipes, the hole just collapses and it's even impossible to find it again" assured Camoin.

On the main cruise, the coring itself takes place as well as first measurements and part of the sampling, provided the type of ship allows for it. The cores are extracted in different ways, at different water depths and of different lengths, depending on the sediments and the objectives. Short cores of less than 1.5m are often used to drill coral

reefs, but if you have high sedimentation rates going back in time you need long cores. Box coring is used for taking surface samples as is the so-called multicores instrument with four short cores, where even the water above the sediment is captured and subsequently the interface analysed. Once a core is on board, its dimensions are measured. Longer cores are cut into segments, then split into two halves, the archive half and the working half, and the first preliminary, non-destructive on-site analyses are made, such as the core description including photos, microbial activity tests and the measurement of the physical properties in a multi-sensor core logger. Then the cores are stored and cooled in containers before undergoing more sampling procedures.

Life on the cruises is rather exceptional: The expeditions are up to two months long and the science is done around the clock – the members of the scientific crew do two four-hour shifts per day. “It’s like a small community living and working together, there is a lot of potential to create a good atmosphere from a scientific perspective, but also to find new friends” said Ralph Schneider of Christian-Albrechts-University in Kiel, who is involved in the GLOW (Tropical Temperature History of Global Warming Events) project. Of course, there are also some downsides, as different personalities can clash as well as families and friends need to be left behind for a considerable time. The crew can be as big as a hundred people, comprising of the science crew, technical crew, the crew maintaining the ship - AMOCINT even had five teachers on board who participated in the “Teachers at Sea” program of EGU-IPEV (European Geoscience Union-Institut Paul-Emile Victor).



As not all techniques can be run on board, the sampling is either done in the individual labs or as a joint activity in form of a science sampling party like in Bremen. “Everyone is sampling for everybody. So it’s really a collaborative activity with everyone having a different task” explained Camoin. The scientists receive numerous



sampling requests from their community and have to divide their labour. If the cores are sampled in different labs, the results are usually shared in order to avoid duplicate sampling.

Marine coring and drilling is a challenging endeavour. Needless to say that a good recovery of the cores is essential – sometimes the sediment is lost when pulling out the core and the so-called core-catcher at the bottom doesn’t shut. The prevailing weather conditions are another crucial success factor: storms, for example, make operations nearly impossible. “Depending on the availability of the ship, you might enter into hurricane season and might lose a week of operations” elaborated Schneider. At times, failures of cruises are more man-made and can reach from difficulties in receiving territorial approval before strict deadlines via rescheduling of slots on the coring ships to failed orders of indispensable drilling equipment. All these factors can seriously jeopardise not only the cruise itself, but also entire research projects. Especially newly hired PhD students are highly dependant on the material retrieved from the sea, as they need to obtain data in time.

EuroMARC is a programme in a truly collaborative fashion. “The great benefit for us is to work in a real network, to exchange data, but also to intercalibrate the results among the labs.” said Camoin. “EuroMARC is multidisciplinary, multilab, and this is how science works now and it’s very enriching for us to collaborate with other people.” added Kissel. First fantastic results have been obtained, such as the discovery of the first ever black smoker field at an ultra-slow spreading ridge by the H2DEEP project headed by Rolf-Birger Pedersen from the University of Bergen. Furthermore, new IODP proposals are also on their way.

For more information, see www.esf.org/euomarc or contact Didier Hauglustaine at euomarc@esf.org
EuroMARC Programme Coordinator



Prizes Recognise Young Scholars in Consciousness Research



The CNCC Essay Prize winners Hong Yu Wong (left) and Dave Ward (right)

The brightest new research talent in the science of consciousness came together for the final of the EUROCORES CNCC (Consciousness in a Natural and Cultural Context) essay prize, held in Edinburgh on 28th June. Two winners were plucked from a shortlist of six finalists who represented the cream of emerging academics in the field.

The finalists each had the chance to give presentations on their submissions at a day long conference at Edinburgh University. The announcement marked the long awaited culmination of a difficult selection and judging process. The award, which is part of the EUROCORES programme CNCC, was aimed at creating a space for promising young researchers to join established scholars from across the scientific and philosophical community and bring their work to a wider audience.

Edinburgh's own PhD student Dave Ward, and Hong Yu Wong from University College London, were selected as joint winners and each received €1500 for their submissions. Only six out of the total of 44 submissions were eventually shortlisted for the competition. The final six candidates were chosen for the unique contribution

they are making to the understanding of consciousness, and all papers will be published in a forthcoming edition of *Psyche*.

Hong Yu Wong presented a paper on bodily experience and human agency, which examined the crucial role of bodily awareness in the control of action. The paper drew on empirical and conceptual knowledge to demonstrate human agency depends on embodied consciousness.

"It is very nice to win this prize and a big help for my career," Hong Yu said. «More importantly this was a very interesting competition because it celebrates this kind of interdisciplinary approach and gave us junior scholars an opportunity to interact with and get feedback from established professionals.»

Dave Ward's paper focused on how our knowledge of colour facilitates human action in the world. Dave's view is that our ability to distinguish colour is a function of how we sort information in our consciousness in order to "sift, sort and track" our perceptions and act accordingly.

"This is a really great honour," said Dave. "To be chosen from such a talented group of entrants is great, and it was good to have a chance to get some top feedback on my work."

Following the announcement of the prize-winners, Professor Andy Clark from Edinburgh University, commented on the quality of talent on show at the conference, and predicted a promising future for a collaborative, interdisciplinary approach to understanding consciousness.

"Interdisciplinary studies of the mind are becoming more and more important," he said. "Encouraging young



Features

scholars like this who are truly empirically informed, interdisciplinary, and excited about the mind – bringing them together and showing them that they can do things like this – I think is incredibly important.”

Clark emphasised that EUROCORES is an essential form of support for helping young research talent make the move into serious cutting edge scholarship. “The European Science Foundation is doing a very good job of supporting that. It is just an exciting time to be studying the mind and a therefore a great time to get young scholars interested” continued Clark.

The idea for the essay prize was born out of an attempt by those working on the CNCC programme to allow young researchers an opportunity to present their work to the international academic community. The programme is run by senior scholars in the field and brings together the world’s leading minds in the exploration of human consciousness. Projects across Europe aim to form a complete understanding of mind from both a social and cultural perspective, as well a conceptual and scientific one.

Despite the fact that this work is highly specialised and involves pioneering work at a high level, a lot of the research is carried out by students at PhD level. These young scholars explore detailed conceptual problems and carry out experiments and investigations in crucial areas. Organisers of CNCC were conscious of the vital role these contributions make to the overall goal of understanding consciousness. The essay prize aims to recognise this work, and the rich pool of talent that forms the basis of an exciting global project to unravel the mysteries of the mind.

Professor Clark added that an award like this can also help to recognise the powerful contribution graduates are already making to international cutting edge research in the science of consciousness. “One thing that we have seen here is just how much serious, first author work is being done, by people whose names you probably won’t see in published journals for a few years yet, but who are certainly going to be at the forefront of the next generation” concluded Clark.

**For more information, see www.esf.org/cncc
or contact Eva Hoogland
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CNCC Programme Coordinator**



Quantum Measurements, Precisely

EuroQUASAR kicks off

The new EUROCORES programme EuroQUASAR - European Quantum Standards and Metrology - could lead to crucial developments in time-keeping and scientific measurement. The work may allow scientists to measure the effects of gravitational waves to go beyond Einstein's theories and gain new insights into quantum effects that will lead to quantum computers and communications. The programme will also pave the way for the most accurate optical clocks and inertial sensors ever made that will provide researchers with better than pinpoint accuracy in determinations of the fundamental physical constants of nature.

EuroQUASAR will build on European expertise in this field to develop the next generation of quantum standards that will form a new platform for exploiting quantum metrology and the novel techniques emerging from quantum engineering. Here, we highlight an exemplar project and hint at the potential of two more.

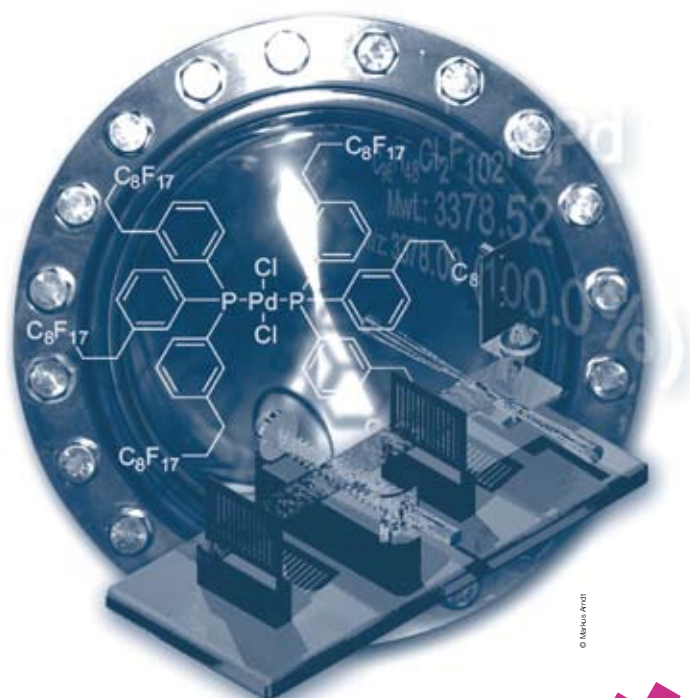
MIME

Professor Markus Arndt of the University of Vienna is project leader for one of the three EuroQUASAR Collaborative Research Projects (CRPs): Molecule Interferometry and Metrology (MIME). He and his colleagues in the international team are focusing on the development of new methods for quantum interferometry.

"The research is primarily driven by the desire to better understand the foundations of quantum physics and the transition between the 'weirdness' of quantum physics and the 'normality' of our classical, everyday world," Arndt explains. MIME will open a window on waves made of matter and explore new applications that can investigate the properties of matter and answer questions about the interface between quantum physics and physical chemistry.

"This task requires the contribution of experts from complementary scientific disciplines," Arndt explains. MIME unites quantum experimentalists, (with Arndt coordinating the network from Vienna and colleague Hendrick Ulbricht moving to Southampton University, UK), quantum theorists (Klaus Hornberger, University of Munich, Germany), chemists (Marcel Mayor, University of Basel, Switzerland) and experts in nanotechnology (Herbert Gleiter and Horst Hahn, Karlsruhe, Germany).

"EUROCORES programmes help foster European collaboration by providing funding and an intellectual framework", explains Arndt, and shortly after the launch of the EuroQUASAR programme the MIME team announced its first scientific and fully collaborative success. The research was featured on the cover page of the prestigious chemistry journal *Angewandte Chemie* (Angew. Chem. Int. Ed. 2008, 47, 6195-6198).



Matter wave interferometry with large molecules in metrology

© Markus Arndt

Arndt and colleagues recently reported work that simultaneously advances both project goals at the same time. They have studied a large industrial catalyst molecule containing palladium metal and chemical groups packed with fluorine atoms. This compound is not amenable to the analyst's usual tool of choice, mass spectrometry (MS). MS is a powerful tool for probing particle mass but it usually relies on the use of charged particles. However, for many complex materials with weak bonds the ionisation process itself may modify the molecular composition, structure or conformation before it even reaches the detector. Instead, the team turned to matter wave interferometry to demonstrate their analytical prowess on the biggest molecule to show matter wave interference. The technique works because charge on a molecular can be skewed across the structure. This 'polarisation' is a good indicator of molecular details, such as mass, geometrical or the sequence conformation.

Polarisability can be measured precisely using a Kapitza–Dirac–Talbot–Lau matter wave interferometer, as designed and build for the first time in Vienna. The test compound has a known mass of 3378.5 atomic mass units (amu), but earlier molecular beam experiments claimed just 1601 amu. This value corresponds to the mass of the two individual fluorine-containing building blocks. Since quantum interferometry depends on both the molecular mass and also its polarisability the team could discern molecular modifications in the source, in front of the interferometer, from those in the detector behind it. From the ratio of molecular polarisability and mass the MIME team then assigned the components in the molecular beam.

"The success of the experiment represents a good illustration of how new methods in basic science might also lead to new and initially unexpected solutions in applied research: the quantum interferometer can also assist as a complementary tool for mass spectroscopy (MS) and molecular analysis," Arndt explains. "It is important to develop methods that can identify and characterize neutral molecules," explains Arndt, "quantum interferometry is one such possibility."

"Future work will aim at extending the range of experiments to a larger variety of even more complex molecules and will address a wide range of molecular properties," Arndt adds. For instance, the researchers hope to work with molecules up to 10000 amu, which will be an order of magnitude bigger in mass and complexity than any other studied in quantum interferometry.

Two other Collaborative Research Projects include IQS and QuDeGPM

The main aims of IQS - Inertial Atomic and Photonic Quantum sensors: Ultimate Performance and Application

- are to improve optical clocks using neutral atoms and single ions and to develop new scientific tools, such as novel cooling schemes, to improve optical clock performance.

Ultimately, the research being undertaken by Wolfgang Ertmer of the University of Hannover, Germany, and his colleagues may lead to a portable optical clock.

Within this consortium, the collaborative research team will investigate the ultimate potential of inertial atomic and photonic quantum standards and their applications in earth observation and fundamental physics. They suggest that for the first time scientists will be able to work together on atomic and photonic quantum sensors with experts in earth observation to measure gravity with unprecedented accuracy. The work will allow them to extend geophysical models and monitor fluctuations in the Earth's rotation.

The QuDeGPM - Quantum-Degenerate Gases for Precision Measurements - collaborative project will investigate the techniques of laser cooling and trapping that are used to create bright sources of macroscopic matter waves for use in atom interference experiments. The extension of this pioneering work will be carried out by Hanns-Christoph Nägerl, of the University of Innsbruck, Austria and colleagues, which will then be used in the precision determination of fundamental constants and inertial forces in free space, as well as highly sensitive measurements of surface forces on the micrometre-length scale.

Because atoms interact with each other, unlike photons of light, the researchers will be able to exploit various tricks from non-linear optics like squeezing to boost sensitivity. However, this interaction also represents a disadvantage in shifting phases of matter which have to be overcome using recent advances in controlling atomic interactions.

The project's main objectives are to perform precision atom interferometry with quantum degenerate gases, to use quantum degenerate gases for precision surface probing, and to develop novel test measurement schemes using non-classical matter wave states.

For more information, see www.esf.org/euroquasar or contact Farzam Ranjbaran at euroquasar@esf.org EuroQUASAR Programme Coordinator & Scheme Coordinator



RNA Emerges from DNA's Shadow

RNAQuality holds first conference

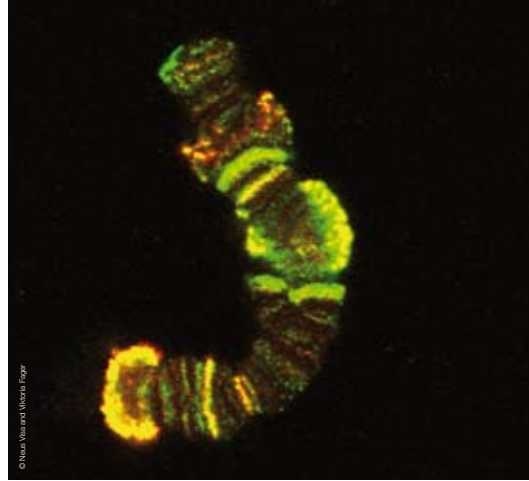
RNA, the transporter of genetic information within the cell, has emerged from the shadow of DNA to become one of the hottest research areas of molecular biology, with implications for many diseases as well as understanding of evolution. But the field is complex, requiring access to the latest equipment and techniques of imaging, gene expression analysis and bioinformatics, as well as cross-pollination between multiple scientific disciplines. This has led to a major European push to bring the field together via a network of overlapping multidisciplinary projects, spearheaded by the European Science Foundation (ESF) with its EUROCORES programme RNAQuality.

The great potential of the RNA research field to solve a variety of fundamental problems relevant for understanding of life and predicting cures for diseases was unleashed at the RNAQuality programme's first conference, held in Granada in June 2008. As well as many European groups, the conference was represented by leading pioneers from the US in the field, who welcomed the new initiative as an important collaborative force.

RNA was once considered to be just the faithful messenger taking genetic information from the genome to the ribosome, or protein factory, but that view has been blown away by recent research. It is now known that RNA has additional roles in regulating gene expression and as an important structural component both in the cell nucleus and in the ribosomes. Furthermore, errors in transcribing RNA from DNA are frequent and require a variety of elaborate quality control mechanisms to prevent both mis-regulation of genes, and manufacture of aberrant RNA and protein fragments that clog up the workings of the cell, and that if unchecked can cause a variety of disorders, including cancers.

Delegates at the conference also heard how there is great potential for creating new compounds that manipulate the cell's apparatus for transcribing DNA into RNA to overcome a number of serious disorders caused by deleterious mutations in specific genes, as opposed to problems with the RNA itself. Alan Jacobson from the University of Massachusetts Medical School presented one of the most exciting developments, a molecule that overcomes a common deficiency in genes that prevents their being read right up to the end of their sequence during transcription. Jacobson pointed out that there are about 2400 human genetic disorders resulting from mutations that cause genes to be incompletely read, including cystic fibrosis and muscular dystrophy. A drug based on the molecule is now entering trials that could lead to it becoming generally available. Results so far indicate dramatic improvements in both cystic fibrosis and muscular dystrophy sufferers, although it is only suitable for those disorders caused by the presence of a premature stop sign in a gene sequence, as a result of a mutation. It does though highlight the huge therapeutic potential of the research into RNA and its quality control.

Significant progress has been made in different aspects of RNA research over the last decade or more, leading to



Chironomus tentans: Co-localisation of the RNA Exosome (Rrp4) and sites of mRNA processing (snRNPs)

the current situation where many groups are working on different aspects of the problem. The challenge being met by the ESF's RNAQuality programme is to bring these groups together, and make Europe a much greater force in the field, according to Jim Anderson, from Marquette University's Department of Biological Sciences in the US.

Another important aspect of RNA research lies in the interaction between DNA transcription, and the physical structure both of the membrane-bound cell nucleus and the genome coiled within it. Genes are transcribed within the nucleus and the resulting RNA molecules then emerge through small holes that are connected to the genome by proteins called nuclear pore complexes. In one of the presentations, Nick Proudfoot from Oxford University in the UK explained how some genes are enhanced by being close to the nuclear pore complex, indicating a close relationship between gene expression and nuclear structure that must have played out through evolutionary history. Another point to emerge from Proudfoot's presentation was how some genes are expressed more efficiently for a different reason, because the section of DNA containing their sequence is coiled locally into a loop, rather than as a branch. Quite simply, this speeds up the transcription process of reading the gene because the enzyme concerned, RNA Polymerase, can just keep on encircling the loop. As Proudfoot explained, this is relevant for quality control as well. "They may afford quality control by 'telling' the polymerase it is transcribing a bona fide gene, with a proper beginning and end," said Proudfoot. "Otherwise the polymerase may have initiated erroneously." The existence of a DNA ring makes it easier to identify the sequence corresponding to a gene, and transcribe it correctly.

For more information, see www.esf.org/rnaquality or contact Astrid Lunkes at rnaquality@esf.org
RNAQuality Programme Coordinator



The Amazing Quantum World of Ultra Cold Matter

**EuroQUAM presents itself at ESOF
Barcelona, Spain • 21 July 2008**



Clockwise: Eduardo Punset; Christopher Foot; Christopher Foot, Salomon and Maciej Lewenstein

Many of us have been fascinated by the concept of absolute zero, the temperature at which everything comes to a complete stop. But physics tells us otherwise: absolute zero cannot be reached but only approached, and the closer you get, the more interesting phenomena you find!

Three outstanding scientists from the EUROCORES programme EuroQUAM gave insight into this 'cool' matter at the event "The Amazing Quantum World of Ultra Cold Matter", held at this year's ESOF (Euroscience Open Forum) in Barcelona. It was co-organised by the European Science Foundation (ESF) and The Institute of Photonic Sciences (ICFO) within the collaborative research programme "Cold Quantum Matter" (EuroQUAM).

Maciej Lewenstein leads the quantum optics theory group at ICFO and is a Humboldt Research Prize Awardee. Introducing the basics of quantum mechanics, he explained without mathematics why laser light cools atoms and told the audience about recent developments in atomic, molecular and optical physics and quantum optics, toward reaching temperatures close to absolute zero. "I expect major developments in fields like quantum information", said Lewenstein. He argued that while in classical physics absolute zero is in certain sense 'boring', in the quantum world new, fascinating states of matter such as Bose-Einstein condensates arise at ultralow temperatures. Moreover, he elaborated on the tremendous advances in physics that have made such experiments possible, and which led to Nobel prizes in physics in 1997 and 2001. "Concerning Nobel Prizes in this area, it's only a question of who's next" predicted Lewenstein.

Christophe Salomon is Head of the Cold Fermi Gas group at Ecole Normale Supérieure, France and Principal Investigator for the ACES/PHARAO Space Clock Mission. He has received the "Three Physicists" prize (France), the Mergier-Bourdeix Grand Prize of the French Academy of Sciences, the European Time and Frequency Prize, and the Philip-Morris Prize.

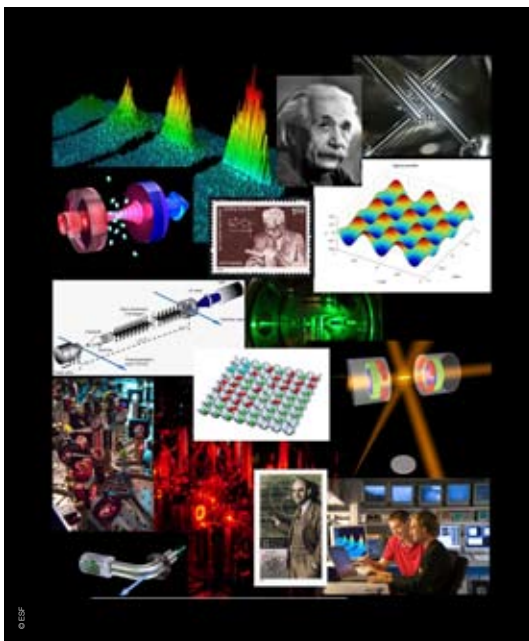
In his talk "Precision Time with Cold Atoms" he described an important application of cold atoms, the realization of ultra precise clocks. Using atomic fountains and microwave radiation, the SI unit of time, the second, is realised with an error of less than one second over 100 million years. Clocks operating in the optical domain show even better performances and cycles of light can now be easily counted with a femtosecond laser. "In a few years clocks will be able to monitor local changes of the Earth gravitational potential by using relativity, which might help us forecast tsunamis, earthquakes, or global climate warming", said Salomon.

The third speaker, Christopher Foot, Professor of Physics at Oxford University, elucidated "The extraordinary behaviour of quantum systems". Small particles such as atoms and electrons behave in strange ways that

often seem very weird when compared to our everyday experience of large 'ordinary' objects such as a tennis ball or football. For these very small objects the effects of quantum mechanics are manifested in striking ways, which Foot outlined.

A single quantum object can exist in two places at once – "It is in a state of indecision" said Foot. Additionally, there is a second property of quantum systems of two or more particles that is truly difficult to understand, known as entanglement. Indeed Einstein pointed out that this so-called "spooky action at a distance" is so bizarre that he thought there must be something wrong. Experiments have shown, however, that the quantum world really behaves in this peculiar way. "By understanding it we can do new things such as build quantum computers that, in the future, could store and process far more information than 'ordinary computers' and may outperform them in certain applications, e.g. cracking the encryption commonly used to transmit information electronically" explained Foot.

With current technology, quantum systems of many atoms at temperatures less than one millionth of a degree above absolute zero can be made. These systems can be controlled in such a way that they act like small quantum calculating machines, or 'quantum simulators', with which the quantum properties of a wide range of other interesting physical systems can be studied. Foot also gave an example of this type of experiment currently carried out in the EuroQUAM programme, where laser beams are used to form 'optical lattices' that resemble crystals.



Spanish Anchorman and former Minister of European Relations in the Spanish Government Eduardo Punset moderated the event, and Jürgen Eschner, an experimentalist and group leader from ICFO, was the main organizer of this activity of EuroQUAM. "I think our biggest challenge in the coming years is to bring together knowledge and entertainment, and the speakers captivated the public here in Barcelona" said Punset. ESOF marked a unique opportunity for EuroQUAM to go public with its research and make cold quantum matter more graspable. "We have clearly conveyed the fascination that the EuroQUAM scientists have for the exciting fundamental phenomena and technological opportunities of ultra-cold matter" concluded Eschner.

For more information, see www.esf.org/euroquam or contact Ana Helman at euroquam@esf.org EuroQUAM Programme Coordinator



Schoolteachers' Workshop on the Carbon Cycle

2008 Geosciences Information for Teachers (GIFT) Workshop, Vienna, Austria • 13-16 April 2008

The EUROCORES programme EuroCLIMATE contributed to the sponsoring of the 2008 Geosciences Information for Teachers (GIFT) workshop in Vienna from 13-16 April during the European Geophysical Union (EGU) General Assembly 2008. Several EuroCLIMATE scientists participated in this event. This year's theme for the workshop was the carbon cycle, one of the main focuses of the EuroCLIMATE programme. The topics covered both the present day carbon cycle, the past variations of CO₂ concentration as recorded by ice cores data, the perturbations by human activities, ocean acidification and the future evolution of the carbon cycle and its impact on climate.



A classroom full of teachers!

The main objective of the GIFT workshops is to spread first-hand scientific information to science teachers of primary and secondary schools, significantly shortening the time between discovery and textbook. They also aim at providing the teachers with material that can be directly transported to their classrooms. In addition, the full immersion of science teachers in a truly scientific context like the EGU General Assembly and the direct contact



Teachers experimenting in daylight on CO₂ absorption/production by plants

with world leader geo-scientists is expected to stimulate curiosity towards scientific research that the teachers will ultimately transmit to their pupils.

Each workshop focuses on a unique general theme, combines scientific presentations on current research in the Earth and space sciences, given by prominent scientists attending the EGU General Assemblies with hands-on, inquiry-based activities that can be used by the teachers in their classrooms to explain related scientific principles or topics presented by science educators. 70 teachers from 18 countries attended the 2008 GIFT Workshop, representing a large potential for networking and collaborations, the sharing of experiences, and an awareness of science education as it is presented outside their own countries. In addition to their scientific content, the GIFT workshops are of high societal value. Both scientists and teachers reported on their results in a very lively and creative way.

For more information, see www.esf.org/euroclimate or contact Didier Hauglustaine at euroclimate@esf.org EuroCLIMATE Programme Coordinator



S3T Focuses on Engineering Challenges of Sustainable Energy Use and Production

Morgon, France • 15-17 October 2008



A great opportunity identified: synthesis of new materials for engineering sustainable energy systems

As another fruitful joint activity, ESF and NSF organised a workshop on the applications of “Adaptive Structures and Materials to Sustainable Energy and the Built Environment” at Château de Pizay, Morgon, Burgundy, France, during 15-17 October 2008. The workshop was organised as a networking and collaborative effort in line with parts of the research focus of the S3T programme and the objectives of NSF’s Directorate for Engineering, Structural Materials and Mechanics (SMM) in relation to energy efficiency for the built environment. The workshop focused on the current and future applications of smart materials and structures to the engineering challenges that limit more efficient energy production and use. This initiative has resulted from the ongoing S3T collaborations with the NSF’s Directorate for Engineering.

The main motivation for this workshop was to bring together researchers from smart structures and materials communities (multifunctional and adaptive) with those involved in applied research and technology development dealing with energy and the environment. Specifically, topics such as innovative and efficient means of energy production and consumption, with minimum undesirable environmental impacts were considered.

Invited keynote speakers started the discussions by three presentations on:

- 1) Energy and the Environment
- 2) Energy Harvesting - Smaller-Scale Distributed Energy Production and Uses
- 3) Technology for Energy-Efficient Buildings



Offshore wind farm Lillgrund in the Øresund between Malmö and Copenhagen

The workshop was structured in four thematic plenary sessions including invited expert presentations and the same number of parallel break-out group discussions on the following topics:

- a) Solar
- b) Wind
- c) Energy Harvesting
- d) Energy-Efficient Buildings

As the main outcome of the workshop, four grand opportunities for research were identified, namely:

- Adaptive Systems for Sustainable Energy
- Integrated Energy Usage
- Multi-Scale Life-Cycle Assessment and Optimisation for Built Environment
- Synthesis of New Materials for Engineering Sustainable Energy Systems

For more information, see www.esf.org/s3t or contact Farzam Ranjbaran at s3t@esf.org
S3T Programme Coordinator & Scheme Coordinator



BOREAS Workshop “Population Dynamics in the Circumpolar North”

Umeå, Sweden • 6-9 June 2008

The workshop “Population Dynamics in the Circumpolar North” was organised and co-sponsored by the Centre for Population Studies (CPS), the Centre for Sami Research (CeSam), and the Graduate Programme in Population Dynamics at Umeå University, in the north of Sweden. The participants in this workshop included researchers and graduate students from BOREAS CRPs (“Moved by the State: Perspectives on Relocation and Resettlement in the Circumpolar North” (MOVE), “Home, Hearth and Household in the Circumpolar North”(HHH), and “Understanding Migration in the Circumpolar North” (UMCN)) as well as other experts in this field of research.

The presentations covered various aspects of population dynamics among the peoples in Alaska, the Russian and the Canadian North, Northern Sweden as well as Greenland.

Several presentations pointed out common socio-economic, geographical, ethnical, cultural, and historical factors determining place attachment and migration patterns among different populations of the circumpolar North. Some core issues have been identified as common for several of the studies presented at the workshop. One is the gender dimension of population change in the North. Data from recent years indicate that young

women seem to be more prone than young men to leave villages and traditional occupation (trade) for urban areas in search for better education opportunities. This has especially negative implications for the population structure and future developments in localities with high net-outmigration.

The aging population in regions with large net-outmigration is another common problem in the circumpolar North and it seems to be getting worse. Empirical evidence shows substantial regional differences and changes in interregional migration flows.

An example of the former is that the migration process seems to be distinctly different between urban and rural areas. An example of the latter is the dramatic change in migration patterns in Russia over the last decade. In this case, factors that might have contributed to changes in origins and destinations include the increased “cost of distance”, changing relative incomes among regions and countries, structural changes in the northern economy, and changes in migration legislation.

For more information, see www.esf.org/boreas or contact Doubravka Olsakova at boreas@esf.org
BOREAS Programme Coordinator



A Russian census enumerator recording household details for a family of *eniseitsy* [Ket] on the Podkamennaia Tunguska during the Turukhansk Polar Census Expedition of 1926/27

SONS Double Act: Scientists get together in two workshops

Cetraro, Italy • 15-18 September 2008 & Baden-Baden, Germany • 28 September – 1 October 2008



Workshop participants in Cetraro, Italy

Two workshops were held in the SONS programme in September, bringing together a total of almost 100 scientists working in this programme.

The first workshop on Liquid Crystals was held in Cetraro from 15 to 18 September 2008 with over 40 scientists working on two Self-Organised Nanostructures (SONS) Collaborative Research Projects, namely SCALES (Complexity across Length Scales in Soft Matter) and LC-NANOP (Liquid Crystals Nanoparticles).

'Liquid Crystals' is an established field, yet despite of this, both networks have looked at pushing the old technology into new and insightful ways. The breadth of research presented at the conference spanned from the synthetic and computational methods typically used to characterise this materials, via the use of block-polymers and dendrimers to metallic nanoparticles. The small nature of the conference exposed younger researchers to established names in the field and allowed for an informal environment to discuss their science. Sharing the common goal of adding order to the disordered, the groups looked at adding liquid crystal units to surfaces, attaching nanoparticles and observed order in different spatial dimensions and length scales.

Ewa Gorecka's talk on the functionalisation of nanoparticles with liquid crystals was well received. She managed to dissolve nanoparticles with LC attached inside a liquid crystal (an extremely hard thing to do). LC doped with nanoparticles carry a great promise for photonics applications, because with LC it is possible to steer light. But what is lacking is a good optical contrast, and nanoparticles provide one. Regarding the future of 'Liquid Crystals' Gorecka said that LC future is in new applications - optical band gap and maybe metamaterials.

Members of other CRPs also attended the workshop, in order to create links and bridge gaps across disciplines. A very interesting talk was given by Saif Haque, Principal Investigator of SOHYD (Self-Organized Hybrid Devices), concerning the current status of photovoltaics research.

A second SONS workshop 'Magnetism at Surfaces' was held in Baden-Baden, Germany, from 28 September to 1

October 2008 involving two other SONS CRPs: Fun-SMARTS (Assembly and Manipulation of Functional Supramolecular Nanostructures at Surfaces) and SANMAG (Self-Assembled Nanoscale Magnetic Networks). The main focus of this workshop was to bring together chemists and physicists to address the structural organisation and functional integration of magnetically active components at surfaces. The meeting aimed at reporting the latest development in the field, experimental activities and theoretical understanding of the organisation, interaction and steering of nanoscale magnetic systems.

Among the talks given at the workshop, Johannes Barth, from Technical University Munich, and Fun-SMARTS member, discussed how to control and assemble porphyrins on metal surfaces. Porphyrins are ubiquitous in nature, as they are found in vitamins and chlorophylls and they are used in catalysis, as switches and motors, and in nanoelectronics. Barth presented how they are deposited on Au(111) surfaces by vacuum deposition and, depending on the functional groups present, how it is possible to steer their assembly and form ordered arrays.



The Baden-Baden workshop participants

Pietro Gambardella, researcher at the Institut Català de Nanotecnologia and member of SANMAG explained in his talk 'Supramolecular control of the magnetic anisotropy in two-dimensional High-spin Fe arrays at a metal interface' how he is able to self-assemble Fe and TPA (terephthalic acid) on Cu(100) substrates. The iron complex was deposited by sublimation in vacuum of molecular crystals. To investigate the structure formed they use in situ XAS and magnetic circular dichroism. These systems are highly studied because, due to their ferrimagnetic/antiferromagnetic behaviour, they are of importance in the area of molecular electronics and spintronics.

"One of the benefits of working in a EUROCORES programme is the possibility to increase scientific and technological excellence in one's own field through sharing of expertise and knowledge" said Gorecka and concluded that she was even able to learn something outside her field.

For more information, see www.esf.org/sons or contact Antonella Di Trapani at sons@esf.org SONS 2 Programme Coordinator



TECT Summer School “Tools of the Trade in Cooperation Research”

Obernai, France • 30 August – 6 September 2008



Grooming in wild bearded capuchin monkeys (*Cebus libidinosus*) in Boa Vista, Piauí, Brazil

The TECT-INCORE Summer School “Tools of the Trade in Cooperation Research” brought together speakers, teachers and students from such different disciplines as anthropology, biology, chemistry, economy, history, mathematics and philosophy with the goal to focus on methodological issues in the study of cooperation.

Did the participants of the school succeed in finding a ‘common language’? “The goal of the summer school was not necessarily finding a ‘common language’, but rather to teach students about the necessity to find such a language in the future and to warn them about existing confusion,” explained Prof. Ronald Noë, Université Louis-Pasteur, France, chair of the TECT scientific committee, Project Leader of COCOR and the organiser of the summer school. “One goal of the school was to have the jargon of one discipline explained to the students of another discipline”, continued Noë.

Prof. Jack Owens from Idaho State University, USA, and Project Leader of DynCoopNet, agreed that the school accomplished its principal goal, which was to expose doctoral students and their mentors of all relevant disciplines, to the ‘tools of the trade’ across the range of approaches to cooperation. “These sometimes difficult and confusing encounters will become a source of fundamentally new ideas as these can only arise when such uncustomary disciplinary connections are established,” said Owens.

As many teachers and students have pointed out, differences in concepts still hinder interdisciplinary research into cooperation. “There is confusion about jargon to start with, but more importantly, confusion about the important questions”, explained Noë. The lack of knowledge about the ‘natural history’ of phenomena causes a lack of appreciation for the common denominators of cooperation and thus for the need for common theoretical developments.

In addition, effective mechanisms that would allow an individual researcher to develop collaborative, multi-disciplinary research programs are still rare.

How does TECT aim to overcome the still existing scientific and institutional barriers? “The clear purpose of ESF’s

EUROCORES Scheme is to foment integrated, collaborative, multi-disciplinary, and multi-national research projects that will be transformative,” said Owens, “From this perspective, TECT has already accomplished some interesting things in its program activities, of which the summer school is an excellent example”.

The school sparked new research questions and demonstrated the need for more dialogue between scholars, also within a single discipline. “When listening to discussions of cooperation research within the context of TECT, I realised that there exists in all of the disciplines involved a gap between those who engage in empirical research and those who focus on the development of theory”, said Owens. In his own Collaborative Research Project, Owens aims to bridge such a separation by integrating the work of three groups of researchers: (1) mathematical modelers, with their heavy emphasis on theory; (2) geographic information scientists; and (3) historians, whose practices are usually empirical.

“I have quite consciously been trying to transform myself and institutions to permit the emergence of a new disciplinary orientation: geographically-integrated history”, said Owens, “Although the way I have tried to create a more integrated, collaborative, multi-disciplinary research program might not lend itself to other types of research on cooperation as a phenomenon, others should certainly push themselves to promote more frequent interaction, within the same projects, of empirical and theoretical work”.

Cooperation, also called ‘mutualism’, ‘symbiosis’, ‘reciprocity’ or ‘trading’, present in nature and in human societies and still difficult to explain, is a phenomenon the study of which goes beyond any single discipline or approach. The “nature versus nurture debate” having become passé, scientists need to be able to engage in ‘cross-fertilisation’ of different concepts from genetics to social sciences research in social and individual learning.

For more information, see www.esf.org/tect or contact Doubravka Olsakova at tect@esf.org
TECT Programme Coordinator



Upcoming Events

November	11-15	EuroDEEP session at World Conference on Marine Biodiversity , Valencia, Spain.
	17-20	S3T Advanced Course on Morphing Aircraft, Materials, Mechanisms and Systems , Lisbon, Portugal.
	20-23	Strategic Symposium “Money, Altruism and Genes: Exploring the Genetic Basis of Cooperative and Commercial Behaviours” including the workshop “Genetic Basis of Coalition Formation in Non-Human Primates” and in conjunction with TECT Scientific Committee Meeting (22 November) and TECT General Meeting (23 November) , Barcelona, Spain.
	24-26	EuroMinSci Final Conference , Obernai, France.
December	1-5	SONS 2 session at Materials Research Society (MRS) Fall Meeting , Boston, USA.
	4-6	ECRP Workshop on Transnational Domestic Workers and the National Welfare State , Amsterdam, the Netherlands.
	10-12	ECRP Workshop on Human Rights and Migration: the context for trafficking for forced labour , Bristol, UK.
	6 Oct-15 Dec	EuroQUAM participation in “Captured in a Trap - Tools of the Nanoworld” exhibition , Palais de la Découverte, Paris, France.
	11-12	EuroQUASAR Workshop on Precision Measurements with Atoms, Molecules and Photons , Florence, Italy.
	11-13	ECRP Conference “The Integration of the European Second Generation” , Amsterdam, the Netherlands.
	15-18	FoNE “Spico, Spincurrent and Spintra Workshop” , Palermo, Italy.
January	15-17	Inventing Europe Conference “Appropriating America, Making Europe” , Amsterdam, the Netherlands.
	25-30	EuroDEEP participation at ASLO 2009 , Nice, France.
	28-31	CNCC Workshop “Motor Representations and Language of Space” , Lille, France.
February	17-21	EuroQUAM at Young Atom Optician Conference (YAO) 2009 , Vienna, Austria.
March	9-11	ECRP Workshop on Trafficking for Forced Labour: trends in migration and progress on policy-responses , Warsaw, Poland.
April	15-17	EuroQUAM participation in Faraday Discussion 142: Cold and Ultracold Molecules , Durham, United Kingdom.
	19-24	European Geosciences Union (EGU) General Assembly 2009 , Vienna, Austria. EuroDIVERSITY session: Biodiversity Science in Europe: new tools and strategies. EuroMARC session: European Collaboration for Implementation of Marine Research on Cores. TOPO-EUROPE session: TOPO-EUROPE - A New European Collaborative Research Programme (Overview)



www.esf.org/eurocores

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