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## CHEMISTRY RESEARCH FUNDING SCENE IN IRELAND

### OVERVIEW

The two main agencies funding Chemistry research in Ireland are the Irish Research Council for Science, Engineering and Technology (funded through the Department of Education and Science) and Science Foundation Ireland (which is funded through the Department of Enterprise, Trade and Employment. Both have been formed since 2000 when the Irish Government, following a successful "Foresight Initiative", decided to allocate more substantial funds to basic research and to strategic oriented research.

IRCSET is mainly concerned with individual grants and scholarships and concentrates these at the early stage of a research career. The Government has committed to doubling the number of researchers in Ireland by 2010 (relative to the number in place 10 years earlier) and so IRCSET will over the next three years double the number of PhD Scholarships offered, from about 160 per year to 300 per year. All areas of Science and Engineering are covered by IRCSET, so about 26 new Chemistry PhDs are awarded each year currently; the success rate is about 20%.

The Scholarships are attractive, open to all EU citizens and the main competitors for Chemistry in the last three years have been Engineering and Computer Science students. An international panel is used to select the candidates for the Scholarships, which then goes to the student (with some additional funding for cost of education such as fees, travel and consumables.).

IRCSET also runs a postdoctoral scheme (50 new starts being offered this year), and has funded starter grants for academics; it is also committed to funding some interdisciplinary work (through the ESF) and a small number of ERANETs.

SFI has very generous funding indeed for strategic research in the areas of Biotech and ICT (or more correctly in the sciences underpinning these two areas). They have also been given responsibility this year for a programme in Basic Research formerly run by Enterprise Ireland and now called 'Research Frontiers', which is the main source of project funding for Chemistry. Some Chemists (less than 10 nationally) are also funded under the Biotech programme by SFI; a typical grant under this 'Principal Investigator' programme is 1million euros over four years.

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IRCSET - the Irish Research Council for Science, Engineering and Technology was established in June 2001 by the Minister for Education and Science, in order to promote excellence in research across the sciences, engineering and technology. The Council's operations are funded by the State through the National Development Plan. The Embark Initiative launched its first programme, the Basic Research Grant Scheme, jointly with Enterprise Ireland in December 2001. This was followed by a new programme of assistance, The Postgraduate Research Scholarship Awards. The Embark Initiative seeks to position Ireland decisively as an international centre of excellence and achievement in research by encouraging students and researchers to pursue a full-time career in their chosen research area. Providing funding to full-time researchers at the early stages of their careers will ensure that research is a viable and beneficial career option and that ideas, potential and creativity, crucial to Ireland's future success, are not lost. Not only will it increase research capacity, but it will also enhance teaching with relevant and current research experience

IRCSET funds research in all areas of science, engineering and technology through 3 main schemes: a Postgraduate Research Scholarship Scheme, a Postdoctoral Fellowship Scheme and a Basic Research Grant Scheme. Applications are received to the schemes through announced calls. There is no pre-determined budget allocated to any particular research area. Awards are made on the basis of excellence.

Despite the above characteristics, one might anticipate a spend of about 4.00 million euros p.a. in the broad discipline of Chemistry.

*Main characteristics of funding policy and procedures*

IRCSET funds basic research. There is not a rigid definition of this, but the nature of all work funded is exploratory as opposed to technological development. The involvement of an industrial partner is not mandatory. Industry is encouraged to participate in a number of designated awards. IRCSET introduced new cooperative awards in 2004 to partner with enterprise funding scholarships at Doctoral level. For these alone, enterprise cooperation is essential.

The drive for projects is bottom up. IRCSET encourage students and researchers to pursue full-time careers in their chosen research area by providing funding to full-time researchers at the early stages of their careers.

IRCSET funds individual scholars and fellows through the Postgraduate Research Scholarship Scheme and Postdoctoral Fellowship Scheme. These fellows are endorsed by and based in recognized research institutes. The Basic Research Grant scheme provides funding for a principal investigator, employed by a recognized research institute, to run research project and employ postgraduate/postdoctoral researchers to assist. Currently, in 2004, 517 scholars are supported under

the Postgraduate Research Scholarship Scheme, 73 fellows are supported under the Postdoctoral Fellowship Scheme and 102 projects are supported under the Basic Research Grant scheme. Each project might typically comprise the Principal Investigator + 1 PhD student and one PostDoctoral researcher.

Proposals are written in English, under recent legislation, Irish may also be employed. There are deadlines for submission of proposals depending on the particular schemes. Electronic submission of proposals is available in the case of the Postdoctoral Fellowship Scheme and Postgraduate Research Scholarship Scheme. The Basic Research Grant scheme is run in collaboration with the partner funding agency and is carried out on a paper basis.

Project evaluation is done by peer review in the case of the Postdoctoral Fellowship Scheme and the Basic Research Grant scheme. For scholarships expert senior advisors outside Ireland are used, but these do not have domain expertise in all areas of application. For the Postdoctoral Fellowship Scheme all postal reviewers/panel members are international. For the Basic Research Grant scheme there is a mix of Irish and international postal reviewers/panel members. All postal reviewers are anonymous. Panel members are published collectively.

The average processing time between submission and decision of a proposal is approximately 12 weeks depending on the scheme.

The eligible costs and success rates vary and depend on the scheme as follows:

Postgraduate Research Scholarship Scheme: The award will be up to a maximum of 19,050 euros in any approved year for the award. Funds may not be carried forward from one year to the next. This amount comprises a maintenance award to the scholar of 12,700 euros as well as support for the research to be carried out, payment of fees to the Research Body and support for conference attendance. The success rate of proposals submitted within the Postgraduate Research Scholarship Scheme in 2004 was 20%.

Postdoctoral Fellowship Scheme: Fellowship will be valued at up to 33,000 euros per annum with an additional contribution to laboratory costs and to travel up to a maximum of 5,000 euros per annum. The success rate of proposals submitted within the Postdoctoral Fellowship Scheme in 2004 was 15%.

Basic Research Grant scheme: Salaries (except for full time staff employed by research bodies eg. Principal investigator); Equipment, consumables, travel are eligible

Project outcome is assessed by interim and final reports.

IRCSET have recently become involved in the ESF EUROCORES schemes, Biodiversity and S3T. IRCSET have signed a research collaboration agreement with French Centre National de la Recherche Scientifique (CNRS) and are working to develop this agreement. There is further interest in participating in transnational research funding programmes.

## OTHER MAJOR CHEMISTRY FUNDING BODIES IN IRELAND

### Science Foundation Ireland

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The Science Foundation Ireland (SFI) is Ireland's national foundation for excellence in scientific research and focuses on research on the fields underpinning two key areas: Biology and Biotechnology and Information and Communications Technology with broad interdisciplinary links. SFI also helps build new centres and institutes of excellence, and ensures that researchers have the equipment, laboratories and other infrastructure essential to a world-class research environment in the priority areas.

To ensure that Ireland continues to benefit from its competitive advantages, the Government, through the National Development Plan 2000–2006, made an unprecedented national commitment to support scientific research, technological development and innovation. In 2000, the Government established SFI as a sub-group within Forfás: The National Policy and Advisory Board for Enterprise, Trade, Science, Technology and Innovation. In July 2003, SFI was established on a statutory basis under the Industrial Development (Science Foundation Ireland) Act, 2003.

From 2004 onwards, SFI assumed responsibility for a related initiative, the Basic Research Grants Programme (now called the Research Frontiers Programme) operated for many years by Enterprise Ireland. SFI will develop this scheme so that Irish scientists, engineers and institutions in all fields have expanded opportunities to contribute to Ireland's economic competitiveness.

The yearly average funding budget for chemistry is about 3 million euros. The main source of project funding for Chemistry now is the Research Frontiers Programme 2005. About 100 Chemistry projects are submitted each year.

### *Main characteristics of funding policy and procedures*

SFI provides grants for researchers from around the world and based in Ireland, for outstanding research visitors, for conferences and symposia, and for collaboration with industry. SFI chooses award recipients in the fields underpinning biotechnology (BioT) and information and communications technology (ICT) through merit review by distinguished scientists. Most of the SFI programmes now have 'open' or 'rolling' calls, this enables researchers to send in an Investigator proposal at any time during the year. A funding decision for SFI Investigator proposals is based on the result of the international peer review of the proposal, the strategic value of the proposed work to Ireland, other funding available to the applicant and SFI's available budget. SFI awards normally range from 100.000 to 1.0 million euros per year. SFI normally takes 4-5 months to finalise the review and the award / contract process

Within the Research Frontiers Programme 2005 there are specific deadlines to be considered, on the one hand late October for the preliminary proposals and on the other hand late January for the final

proposals. Research Proposals have to be written in English and submitted electronically. Within the Research Frontiers the involvement of an industrial partner is not mandatory and the drive for projects is bottom-up. Generally individual research projects are funded and eligible costs include salaries of students and postdocs, consumables and an overhead of 30%. The success rate of proposals submitted is about 17% by number and by value. Few projects are funded above 200,000 euros, spent over two or three years. SFI can make decisions on proposals submitted in the framework of the Research Frontiers programme in late April, so the entire decision making process takes 5 months. Project outcome is assessed by scientific novelty, track record, publications and PhD completions.

Where the application process of an award programme specifies it, SFI asks applicants to nominate at least seven individuals who should review the application and will consider including them in the review process. In these applications, SFI also permits applicants to specify up to three individuals who should not review the application. SFI will not share such proposals with the three individuals that the applicant specifies should not review it. Otherwise, SFI holds the final decision on who reviews proposals. Applicants receive copies of the reviews in their entirety, except for the names and other identifying information of reviewers, and within a reasonable time following the conclusion of SFI's review process. While the criteria vary for each award programme, generally SFI asks the peer reviewers to assess the quality of the ideas proposed, the quality of the applicant's background, and the potential of the research to make a major contribution in its area to Ireland's research development.

#### *SFI's awards programmes:*

Research Frontiers Programme 2005: In order to reflect the significant new investments made by Science Foundation Ireland (SFI), the Basic Research Grants Programme was renamed the Research Frontiers Programme (RFP). The main aim of this programme is to support the very best research in a broad range of disciplines in Science, Mathematics and Engineering. The competition will be driven by the scientific merit of the proposals and every eligible person with competitive research ideas is encouraged to apply.

SFI Fellow Awards: Five-year awards to support senior, distinguished researchers in the fields underpinning BioT and ICT, who come to or are based in Ireland. Funding such items as researchers salaries and the necessary research equipment. Grants normally range up to 1 million euros or more per year.

SFI Fellows – Research Professorships: In addition to funding the most promising talent within Ireland in the research areas underpinning ICT and BIO, SFI will through this Programme assist the Research Bodies in attracting outstanding scientists (SFI Fellows) to their Institutions from outside the state.

SFI Investigator Programme Grants: Four-year awards to leading researchers in the science and engineering sectors that underpin BioT and ICT. Grants can be as large as fellowships but are usually between 100,000- 250,000 euros per year.

SFI Centres for Science, Engineering, and Technology: Campus-Industry Partnerships (CSET) Established to fund researchers who will build collaborative efforts that develop internationally competitive research programmes with researchers from industry. Grants can be valued at up to 5

million euros per year initially, for up to five years. These grants support research partnerships linking scientists, engineers, and industry.

E.T.S. Walton Visitor Awards: These have been instituted with the aim of bringing international researchers to Ireland for periods of up to one year. Grants usually total 200,000 euros per year, including salary, laboratory, and moving expenses.

President of Ireland Young Researcher Award (PIYRA): Through this Award, SFI identifies the most promising of a new generation of top-tier cutting edge researchers in fields that are critical to Ireland's economic and social prosperity.

SFI Workshops and Conferences Grants: Set up to support events either sponsored by or involving Irish scientists and research bodies that reach an international scientific audience.

Several times a year, SFI issues calls for proposals from scientists for its various awards programmes. It also continues to help SFI-funded researchers build partnerships with industry.