



## PROPOSAL FOR AN INSTITUTE

### **1. Purposes and Functions**

a) *Proposed name:* Western Institute for Nanomaterials Science (WINS).

b) *Faculty and Departments involved:* It is expected that initially the core membership of WINS will be drawn from the Faculty of Science, particularly from the Departments of Physics & Astronomy, Chemistry, Earth Sciences, Biology, and to a lesser extent, Applied Mathematics and Computer Science. During the first three years of operation of WINS, the membership will be expanded to include faculty members from Engineering, Medicine and Dentistry, as well as from other institutions in Ontario and across Canada. Upon request, other research personnel and graduate students may be offered some form of associate membership, thus providing for a much larger group.

c) *Rationale and justification:* The Academic Plan of the Faculty of Science designates *Materials and Biomaterials* as one of the core themes, which crosses discipline, departmental and Faculty boundaries. It represents one of the Faculty's top priorities for research initiatives. The establishment of WINS creates an active organizational entity for the *Materials and Biomaterials* theme. The proposed Institute will harness, facilitate and promulgate the collective potential of the already-distinguished materials and biomaterials research within and beyond the University. The Institute will play the leading role in recognizing opportunities and in catalyzing multidisciplinary research and teaching in materials and biomaterials across Western.

d) *Primary objectives:* There are three main objectives:

1. To provide a cohesive presence and collective vision for the UWO Faculties, departments, laboratories and facilities whose researchers work on materials and biomaterials (particularly nanomaterials). This will include coordinating large-scale grant proposals (CFI, ORDCF, NSERC, etc.) to build on current strength in this research field.
2. To develop a graduate program in the Materials and Biomaterials Sciences. This will be strongly integrated with the undergraduate programs in the same area recently introduced by the Faculty of Science.

3. To serve as an organization where Institute members working in materials research will be able to meet, interact and collaborate effectively, and as a communication link to the outside world (e.g. through an external advisory panel, through a web page and by mounting a visiting scientist speaker program).

e) *Primary academic functions*: Research and Graduate Teaching. The research area has already been identified and more details relating to graduate teaching are provided in Section 4.

f) *Expected contributions to the University's mission*: Nanomaterials research is a growing area, not only with the Faculty of Science, but in the Faculties of Engineering and Medicine and Dentistry. WINS is expected to be a major player in coordinating the university's effort in this area.

## **2. Membership**

a) *Sources, proposed period of tenure, and criteria for membership*: The Faculty of Science currently funds WINS. Its annual budget is \$50K. The current Director (M. G. Cottam) and Deputy Director (R. H. Lipson) have been appointed by the Dean of Science for 2 years. The criteria for membership in WINS are still being considered. As a minimum, it is expected that each member of WINS will be a faculty member (or have equivalent status) whose research program contains a substantial thrust in materials science, and/or can teach material sciences at the graduate level. As mentioned, membership will initially be within the Faculty of Science, but will be subsequently broadened. Members will be appointed for a three-year initial term, which will be renewable. Also external (non-UWO) members will be considered at a later time (see also Section 2a concerning establishing an external advisory panel).

b) *Names, institutional affiliation, qualifications, and expected contribution of principal members*: To date the membership of WINS corresponds to the membership of the Executive Committee put together as part of the administrative structure of the institute: M.G. Cottam (Director), R.H. Lipson (Deputy Director), F.J. Longstaffe (Dean of Science, *ex officio*), N.S. McIntyre (Director, Surface Science Western, SSW, *ex officio*), M.R. Singh (Director of the Center for Chemical Physics, CCP, *ex officio*), I.V. Mitchell (Physics and Astronomy, Interface Science Western, ISW, and the Ontario Photonics Consortium, OPC, *ex officio*), N.P.A. Huner (Biology), and H.W. Nesbitt (Earth Sciences). These principal members (who are appointed to June 30, 2006) are charged with running the institute and championing various initiatives that will emerge from discussions of the Executive and future members of WINS. Also WINS is expected to assist coordination between existing units such as SSW, CCP, OPC and ISW.

c) *New faculty appointments proposed*: It is expected that the success and activities of WINS will dictate the level of future support by the Dean of Science for departmental faculty appointments in this research area, and WINS will provide input. Already the Director and Deputy Director of WINS have taken the initiative to submit an outline

proposal to the Dean of Science for a Tier I CRC in Biomaterials/Biophotonics. They have also been asked to comment on candidates being interviewed for a condensed-matter physics faculty position in the Department of Physics & Astronomy.

d) *Alternative faculty workload arrangements proposed:* None at this time.

### **3. Governance, Administration and Organizational Relationships**

a) *Description and membership of governance structure:* The Director (M.G. Cottam, Physics & Astronomy) and Deputy Director (R.H. Lipson, Chemistry) have been appointed by the Dean of Science until June 30, 2006. An Executive Committee has been formed by the Director and Deputy Director (with the approval of the Dean of Science). The Executive Committee, appointed to 30 June 2006 is: M.G. Cottam (Director, WINS, *ex officio*), R. H. Lipson (Deputy Director, WINS, *ex officio*), F.J. Longstaffe (Dean of Science, *ex officio*), I.V. Mitchell (Physics and Astronomy, OPC, *ex officio*), N.S. McIntyre (Director, SSW, *ex officio*), M.R. Singh (Director, CCP, *ex officio*), N.P.A. Huner (Biology), and H.W. Nesbitt (Earth Sciences). The Director and Deputy Director are in the process of establishing an External Advisory Panel of (typically) three or four internationally-recognized leaders in the field to assist the Executive Committee in fulfilling the objectives of WINS. The composition of the External Advisory Board is subject to the approval of the Dean of Science.

b) *Frequency of meetings of governing body:* The Director and Deputy Director will typically meet on a weekly basis. Meetings of the Executive Committee are initially planned for one per month. Consultation with, and occasional visits by, members of the External Advisory Board will take place on an ad hoc basis.

c) *Names, institutional affiliations, qualification and responsibilities of all officers of the Institute:*

**Mike Cottam**, Professor of Physics & Astronomy; former Chair of Physics & Astronomy and researcher in theoretical condensed matter physics; Assistant Dean of Science – Graduate and International Research; role is Director of WINS.

**Rob Lipson**, Professor of Chemistry, Chair of Chemistry and researcher in experimental molecular spectroscopy and photonic materials; role is Deputy Director of WINS.

**Fred Longstaffe**, Professor of Earth Sciences, Dean of Science and researcher in geochemistry; role on the Executive Committee is advisory, *ex officio*.

**Ian Mitchell**, Professor Emeritus of Physics, and co-Director of ISW; researcher in surface science and lead PI of the OPC; role is to represent the OPC *ex officio*.

**Mahi Singh**, Professor of Physics & Astronomy, researcher in the transport optical properties of solids, surfaces and interfaces; role on the Executive Committee is to represent CCP *ex officio*.

**Stewart McIntyre**, Professor of Chemistry and Director of SSW; researcher in surface science; role on the Executive Committee is to represent SSW *ex officio*.

**Norm Huner**, Professor of Biology and Tier 1 Canada Research Chair; former Chair of Plant Sciences and researcher in photosynthesis and energy sensing; role on the Executive Committee is to represent Biology.

**Wayne Nesbitt**, Professor of Earth Science; Chair of Earth Sciences and researcher in geochemistry; role on the Executive Committee is to represent Earth Sciences.

d) *Level of participation of external institutions in governing body, and/or administration of the Institute*: No direct participation by external institutions is planned at this early stage, although we anticipate developing informal contacts with, and exchanging information with, similar institutes elsewhere (e.g. the McGill Institute for Advanced Materials, at McGill University, and the National Institute for Nanotechnology, at the University of Alberta). Also, the role for non-UWO individuals in forming an External Advisory Panel has been mentioned in Section 3a.

e) *Incorporation*: Not sought.

#### **4. Students and courses**

a) *Level and type of involvement of undergraduate or graduate students in institute activities*: A primary mandate of WINS is graduate education through research projects, and through new graduate programs that will be developed. These will be resident within the Faculty of Science with several departments contributing. The organization for this could, for example, be along similar lines to existing interdepartmental programs involving science departments (such as the Theoretical Physics graduate program or the Scientific Computing graduate program). All graduate students working for supervisors associated with WINS will be welcome to participate in various WINS activities, including graduate courses, research seminars, and research projects. Undergraduate students will also join the research effort within WINS as 4<sup>th</sup> year thesis students, and as summer research assistants (using existing funding, e.g., through NSERC). The links between the current undergraduate programs in materials science and any new graduate programs will be closely monitored.

b) *Consultation between WINS, the Faculty of Graduate Studies and the Faculty of Science/Departments*: The executive is composed of senior members from the main Science departments that will be actively involved in WINS teaching. The WINS Director (Mike Cottam) also has responsibilities within the Faculty of Science as Assistant Dean for Graduate and International Research. The Faculty of Graduate Studies will be consulted (through the Dean and appropriate Associate Dean, currently Tony Vandervoort) when the graduate programs become better defined. At that time, issues involving advertising of opportunities, admissions, student support and student supervision will be worked out together. We will explore the structure of the existing programs in Environmental Sciences, Theoretical Physics, and Scientific Computing as models of how to handle a new program in a multidisciplinary field like materials and biomaterials.

c) *Contributions to the developments of new courses, seminars or other instructional programs:* See part a). One initiative that will be started once the membership has been established is a visiting speaker's seminar program. This will also include an annual Distinguished Lecturer series from a top person in the field. It is anticipated that at least one of these talks will be general enough to attract people from the wider University community.

## **5. Physical requirements at Western:**

a) *Space requirements at Western:* (i) at start-up: The Institute will be a virtual one; no new space is required; (ii) and (iii) within 3 years and 6 years: some office space and/or secretarial assistance might be needed in the time frame. Otherwise any requests for space will be linked to successful CFI, ORDCF and/or NSERC grants.

b) *Space requirements at other institutions or locations as appropriate:* not applicable.

c) *Demands on library, computing or other University services:* Initially, the demands on all university services will reflect those of the individual researchers involved. Any costs incurred from the base budget of WINS will be managed by the Director of WINS through the Dean's Office of the Faculty of Science.

## **6. Staffing Requirements**

a) *Requirements for administrative, and/or technical personnel support from the University:* not applicable at the present time.

b) *Details of all proposed support staffing arrangements:* not applicable at the present time, but some secretarial/office support might be needed on a 3-year time scale (see Section 5a).

## **7. Financing and Support**

a) *Summary of funding sources:* As noted above, WINS has an annual budget of \$50K from the Faculty of Science. Once WINS is established, it will be necessary to review this and to carry out a long-range planning exercise, which will include funding. It will be a target to do this by 2006.

b) *Estimated total budget of the Institute:* At start-up the Institute will receive a budget from the Faculty of Science to be administered by the Director and Deputy Director. This is an annual commitment from the Faculty of Science for the first three years of the WINS operation. It is anticipated that the WINS budget will grow due to CFI/ORDCF/NSERC grants. For example, if CFI support were secured, then WINS would apply to UWO for some increased operating support. There have also been initial

discussions about mounting Workshops for external clients who would pay a registration fee to offset the costs to WINS.

c) *Proposed mechanisms for the administration of funds received (including research funds)*: The initial WINS budget will be administered through accounts set up in the Dean's Office of the Faculty of Science. The Financial Officer (Gail Amaral) will manage the accounts. Spending authority rests with the Director of WINS. It is anticipated that any additional funding will be handled by Research Accounting, as is the case for all other projects.

### **8. Intellectual Property and Commercialization**

Not applicable at present, but the possible role of WINS as a facilitator for inventions and partnerships will be kept in mind. This will be in accordance with UWO's established policy involving faculty (through UWOFA), staff and students.

Mike Cottam and Rob Lipson,  
August 16, 2004.