

MEMORANDUM

To: Board of Regents
From: Board Office
Subject: Iowa State University - Equipment Purchase
Date: December 1, 2004

Recommended Action:

Approve the equipment purchase of two or three Nuclear Magnetic Resonance Spectrometers (NMRs) at an estimated cost of \$2.6 to \$2.8 million in support of solution and solid-state research for Iowa State University.

Executive Summary:

Iowa State University is requesting approval for the purchase of two or three Nuclear Magnetic Resonance Spectrometers (NMRs) totaling \$2.6 to \$2.8 million in support of solution and solid-state research. The University reports that the purchases would allow for the creation of a unique research facility in which high field NMR facilities for both solid-state analysis and solution experiments would be integrated.

The instruments would be located in open-access University instrumentation facilities in Gilman Hall and the Molecular Biology building. Heavy use is anticipated by more than a dozen research groups from various departments. The 600MHz NMR would be purchased with support from a National Science Foundation grant.

The University reports that the three instrumentation packages being considered are being selected through the formal bidding process required by Regent policy and would be paid with funds from sources including a National Science Foundation Award, a Carver Trust Award, and funds from various departments at ISU. The final number of instruments purchased will depend on cost savings resulting from the competitive bid.

Two vendors have indicated they will offer proposals to supply the equipment. Bids are due December 9, 2004.

ISU is requesting approval to purchase this equipment before the final bid evaluation is conducted to avoid ordering delays since the Board of Regents does not meet in January 2005. Early approval would also help the University meet funding source expectations. ISU will provide the Board of Regents with an award recommendation and exact budgetary numbers or a status report on the bidding process at the Board's December meeting.

Background:

Policy Manual

Chapter 7.05B(12) of the Regent Policy Manual requires that:

- Equipment costing more than \$1,000,000 must be submitted to the Board for approval; and
- Requests submitted to the Board Office for approval must include the following information:
 - Description of the equipment;
 - Justification of the need for the equipment;
 - Any known alternatives to the equipment proposed; and
 - Estimated cost and source of funding.

Analysis:

Description of Equipment

Iowa State University reports that the purchase of two or three Nuclear Magnetic Resonance Spectrometers (NMRs) would support solution and solid-state research. Nuclear Magnetic Resonance Spectrometers employ strong magnetic fields at various frequencies, which are used to determine molecular structure in solids and molecular dynamics in liquids. Three instrumentation packages are being considered, and the final number of instruments purchased will depend on cost savings resulting from the competitive bid. In all instrumentation packages, a 700 MHz NMR with a cryogenically cooled probe (for maximum sensitivity) would be procured for bio-molecular studies. A 600 MHz NMR (and if purchased, a 500 MHz NMR or 400 MHz NMR upgrade) would be used primarily for solid-state measurements of membranes, biopolymers, and catalysts.

Justification

This purchase would allow for the creation of a unique research facility in which high field NMR facilities for both solid-state analysis and solution experiments would be integrated. The instrumentation would allow for bio-molecular investigations of membranes and the immediate downstream signals that result from membrane activity. These instruments also would serve as broad use instrumentation for a variety of chemical and physical investigations, expanding the University's capacity in these areas independent of bio-molecular research activities.

The instruments would be located in open-access university instrumentation facilities in Gilman Hall and the Molecular Biology building. Heavy use is anticipated by more than a dozen research groups from various departments. Creation of the high field NMR facility would make ISU more competitive in grant solicitations and assist the university in attracting top tier chemistry faculty. The 600MHz NMR would be purchased with support from a National Science Foundation grant.

Alternatives to
Equipment
Purchase

The measurements required to support this type of research can only be performed using properly equipped high-field Nuclear Magnetic Resonance spectrometer. While ISU has several older NMR systems, none operate at the 700 MHz or 600 MHz frequencies necessary to meet the University's research needs. Currently, ISU researchers must commute to other universities to conduct high field strength NMR experiments.

Bidding Process

The NMR systems are currently being competitively bid under the formal bid process required by Regents policy. Two vendors have indicated they will offer proposals to supply the equipment. Bids are due December 9, 2004. ISU is requesting approval to purchase this equipment before the final bid evaluation is conducted to avoid ordering delays since the Board of Regents does not meet in January 2005. Early approval would also help the University meet funding source expectations.

ISU will provide the Board of Regents with an award recommendation and exact budgetary numbers or a status report on the bidding process at the December meeting.

Estimated Cost
and Source of
Funds

Estimated cost is approximately \$2,577,600 if the two-instrument configuration is purchased.

Committed funds include:

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|--------------------|--|
| \$ 957,600 | National Science Foundation Award |
| 150,000 | Office of Biotechnology |
| 100,000 | College of Liberal Arts and Sciences |
| 300,000 | Office of the Vice-Provost for Research |
| 50,000 | Department of BioChemistry, BioPhysics and Molecular Biology |
| 50,000 | Department of Chemistry |
| 20,000 | Department of Chemical Engineering |
| 50,000 | College of Agriculture |
| 100,000 | Plant Sciences Institute |
| <u>800,000</u> | Carver Trust Award |
| <u>\$2,577,600</u> | TOTAL for Two-Instrument Package |

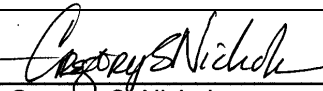
Estimated cost is approximately \$2,877,600 if one of the two possible three-instrument packages is purchased.

Additional identified funds include:

| | |
|--------------------|------------------------------------|
| <u>\$ 300,000</u> | Department of Energy (Ames Lab) |
| <u>\$2,877,600</u> | TOTAL for Three-Instrument Package |


Jean A. Friedrich

Approved:


Gregory S. Nichols