

Report of the NMR-Users Committee.

NHMFL. October 28, 2005 Gainesville, Florida

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At Tallahassee, the major achievement over the past year has been the commissioning of the 900 MHz instrument. The preliminary results that have been obtained in a short period of time demonstrate in an impressive fashion the capabilities of the instrument in the areas of micro-imaging, solution and solid-state NMR. The overall recommendation of the NMR committee is to use the 900 MHz instrument as the centerpiece in building the NMR component of the NHFML into a national resource for NMR spectroscopy and imaging. The committee has two major recommendations (below).

At the University of Florida, the increased support from the NHMFL has catalyzed research in a number of exciting areas, particularly over the past year. New faculty in physics and chemistry have nucleated a group in structural biology that complements the strong imaging community. Several areas were identified that would benefit from a resident Scholar Scientist. The area that would have the most impact from increased support is in molecular imaging.

Recommendations

- 1. Increase the overall funding level of the NMR group at Tallahassee for equipment and personnel.**

Equipment

An annual budget on the order of \$1M/yr is needed for routine upgrade, maintenance and replacement of existing instrumentation (consoles, probes) over the next five years.

The committee supports a suggestion that was made to dedicate the 900 MHz instrument to solid-state and imaging applications, and to acquire state-of-the-art high field NMR instrumentation for solution applications. A dedicated solution NMR instrument could take advantage of HTS coils developed at the University of Florida for small sample volumes and provide access to user groups that do not otherwise have high field solution NMR capability. In addition, solution NMR instrumentation would serve to maintain a strong solution NMR group to support the proposed 30 T/1.3 GHz instrument that is being envisioned for the future. The committee felt that the development of a 30 T/1.3 GHz magnet has considerably more merit than last year's proposal for a 1.0 GHz magnet.

Personnel

An increased budget should be allocated for personnel in several areas.

- Probe development. The advances that have been made in the development of NMR probes for biological solid-state NMR should be sustained. This will likely require additional personnel, particularly for the development of probes for whole body animal imaging.
- Imaging support personnel. The capabilities of micro-imaging on the 900 MHz instrument should be exploited. Support for a staff scientist with imaging expertise and for associated equipment and infrastructure would greatly expand the imaging effort in Tallahassee.
- Scholar Scientist. There was enthusiasm for the recruitment of a scholar scientist who would drive the development of solid-state NMR methodology and applications for the proposed 35T magnet. This person would also increase the critical mass of technical/applications support on the 900 MHz instrument.

2. Expand the external NMR user base.

The NMR users committee felt that the NHMFL should be more proactive in seeking external users that can best take advantage of the high field (e.g. 900 MHz) instrumentation. These would be the external users best able to drive the improvement in instrument capability (such as extended VT capability for material science research).