Dear Faculty Member,

I am forwarding to you an email I recently sent to the users of our Bruker AV500 NMR Spectrometer in DRUG. You are receiving this because you are a PUCC member and your group is a regular user of that spectrometer. If you have any questions or comments about the content of this memo, please let me know.

Thank you and best regards,

John Harwood

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Begin forwarded message:

From: <no-reply@ilabsolutions.com>
Subject: (PINMRF): AV500 NMR (DRUG) - Broken Samples & Operator Responsibility
Date: March 8, 2018 at 5:34:04 PM EST
To: <jharwood@purdue.edu>, <dbertram@purdue.edu>

Please do not reply to this email - click on the link below to contact the core staff.

AV500 (B055 DRUG) Users:

It has become increasingly apparent over the past few months that there are one or more users of the Bruker AV500 NMR in DRUG who are not exhibiting appropriate levels of care and responsibility when using the spectrometer. There are three particular recent events which I would like to bring to everyone’s attention, as follows:

1. In January, an individual dropped an NMR tube into the magnet bore without a spinner. Through a combination of careful work, experience, and sheer luck, I was able to remove the errant NMR tube without damage to the spectrometer, or significant downtime. If the NMR tube had broken in the spectrometer probe, it would most likely have incurred significant downtime (a day or more) and, possibly, expense ($20k or more) to repair the probe. Most troubling is the fact that the individual responsible for this error did not contact PINMRF staff about it.

2. Some time ago the sealed standard sample was broken and replaced by a user with a conventional NMR tube. When I discovered this I replaced the conventional tube with another sealed test sample (no-one on PINMRF staff was informed about the original breakage). A week ago while doing the magnet maintenance I discovered that this sealed tube had been broken. The top of the
tube had been broken off and someone had attempted to reattach the broken piece to the rest of the tube using Parafilm. I replaced this broken standard sample with another sealed test sample.

3. When doing magnet maintenance this week, I discovered that the new sealed standard sample had been broken yet again. The break was in the same fashion as the previous week, and again someone had attempted to reattach the broken top of the tube to the rest of the tube using Parafilm. In both of events 2 and 3 above, no-one on PINMRF staff was contacted about the tube breakage. Further, I consider it to be stunningly irresponsible for someone to attempt to cover up the event by carrying out the Parafilm “repairs” to the broken tubes. This is not only a safety hazard; if the top of the tube were to have come loose and found its way into the magnet bore and the probe, time-consuming and possibly expensive repairs would have been required. Keep in mind that Parafilm is not stable in the presence of organic solvents in the long term, so the broken top would likely separate from the rest of the tube given time.

These three events are only the latest in a multitude of concerns I have about the usage of the AV500. For a long time now I have seen multiple instances of user carelessness, such as glass from broken NMR tubes left on the floor, damage to the sample depth gauge, trash not disposed of properly, and so on. To reiterate, I can only conclude that there are one or more users of the AV500 who are not exhibiting appropriate levels of care and responsibility when using the spectrometer.

I expect all NMR users to keep in mind that being granted access to PINMRF spectrometers is contingent upon each user behaving in a careful and responsible manner when using any and all of our facilities. Appropriate behavior includes, but is not limited to, the following:

1. Notifying PINMRF staff as soon as reasonably possible whenever any problem arises with a spectrometer. In this context a “problem” includes such things as a broken standard sample, a sample breaking in a magnet, damage to a spinner, etc.

2. If you break an NMR tube outside of a magnet you are expected to clean up the breakage as well as possible. Sharps containers are located in every lab for you to dispose of broken glass. Broken glass left in the labs presents a hazard for other NMR users and PINMRF staff.

3. Use the NMR tube rack(s) which we have provided to hold any unused sample tubes, including the standard sample when it is out of the magnet. NMR tubes should not be left on the desk area or lying by the computer keyboard. This practice invites tube breakage.

4. You are expected to keep the facilities reasonably clean. This means putting any trash (such as used Kimwipes) and recycling (such as unwanted printouts) in an appropriate receptacle.

I would also like to take this opportunity to point out to everyone how fortunate we are to have a spectrometer with the capabilities of the AV500 in DRUG. When this spectrometer was purchased we were able to obtain the optional Cryoprobe
Prodigy at an upgrade cost of ca. $150k over the price of the 500 MHz spectrometer with a standard configuration. This probe gives the DRUG 500 spectrometer the highest sensitivity of any of our spectrometers for X-nuclei (except $^{13}$C), such as $^{31}$P, $^{29}$Si, $^{119}$Sn, etc., as well as for $^{19}$F. If the cryoprobe is damaged in any way, such as by broken glass making its way into the sample area, the probe will have to be sent back to Bruker for repair. This is because these probes are assembled in clean-room conditions. Such a repair is likely to cost over $20k. Since it may not be apparent, I can assure everyone that the Facility does not have $20k sitting in an account somewhere waiting to pay for a probe repair. Therefore, if the Cryoprobe Prodigy were to be damaged we would have to take it out of service (possibly indefinitely) until funding is somehow obtained to repair it.

I hope this memo has convinced every user of the need to work with appropriate care and responsibility when using PINMRF spectrometers. Keep in mind that users who are found to be problematic will have their spectrometer access revoked. If any of you have any questions about the material in this memo, or any other facet of PINMRF operations, please feel free to contact PINMRF staff.

Thank you for your consideration.

Sincerely,

Dr. J. Harwood, PINMRF Director

This communication is from Interdepartmental NMR Facility (PINMRF). Click here to contact the core staff.