MEETING INFORMATION

The 52nd Meeting of
THE TEXAS SOCIETY FOR MICROSCOPY
"Embracing All Forms of Microscopy”
February 23rd through 25th, 2017
Waco Convention Center,
Waco, TX, 76702

FEI and Leica Workshops will be hosted by
Baylor University

First Call for Papers
All members are encouraged to present their research or professional accomplishments at our meeting. You can choose to display a poster or speak for 15-20 minutes, including questions. In addition, students can compete for monetary prizes (platform presentations only). Instructions for abstract submission and access to the required submission form are found on the TSM website:

http://www.texasmicroscopy.org
Abstracts must be received by
Friday, January 20th 2017

Registration Information
What's Included
• Workshop and free lunch on Thursday
• Guest Speakers
• Vendor Exhibits
• Platform Presentations
• Poster Session
• Thursday Night’s Social Reception and Friday Luncheon Business Meeting

Advanced Registration
Reduced registration fees are available if you register by the deadline below. Advanced registration is strongly suggested to assure an accurate count for event organization.

The deadline for advanced registration is
Friday, January 27th 2017

Registration forms are also available on our website and can be submitted by email, although payment must be received before your registration is considered final.

Multiple Workshops – Thu Feb 23, 2017
FEI Workshop at Baylor University
Introduction to Focused Ion Beam Scanning Electron Microscopy (two sessions)
Time: 9 a.m. – 12 p.m. or 1 p.m. – 5 p.m.

Leica Workshop at Baylor University
Automated Sample Preparation of Biological Specimen for TEM and SEM
Time: 9 a.m. – 5 p.m.

To register, please, send email with choice of workshop to Bernd_Zechmann@baylor.edu
Spaces are limited, please, register early!

Lodging Information
Courtyard by Marriott, Waco
101 Washington Ave
Waco, TX, 76701
Phone (254) 752-8686; Fax (254) 752-1011
Single room: $125
Reservations:
Click here for reservation with special group rate

Hotel Reservation Deadline:
Monday, January 23rd 2017
After this date, reservations will be accepted on an availability basis only and regular room rates will apply. Mention that you are with Texas Society for Microscopy when making reservations.
CALL FOR PAPERS

The deadline for submission of abstracts for the 2017 Texas society for microscopy (TSM) meeting is Friday, January 20, 2017. Copies of the abstract should be sent by e-mail to: Dr. Camelia Maier, cmaier@twu.edu

ABSTRACT INSTRUCTIONS (SEE SAMPLE ABSTRACT)
Abstracts should be sent as Word documents (.doc or .docx).
Use a proportionally spaced font equivalent to Times New Roman at a 10-11 point type.
Margins should be fully justified, avoiding large gaps between words.
The title should be all capitals in 12 point, bold type followed by author’s names and affiliations as shown in the sample abstract. Mark the presenter’s name and show the affiliation, if different, for each author.
Go to the next line, indent ¼ inch for each paragraph or use only one paragraph. The abstract should be either one page long with one figure or two pages long with more than one figure (please see attached examples). Abstract should present results and state clearly and concisely what was determined or could not be determined by the microscopy studies conducted. Abstracts that do not present results but elaborate on future work will not be accepted for presentation and publication in the Texas Journal of Microscopy.

ABSTRACT SUBMISSION REQUIREMENTS
Please indicate at the time of submission (check the appropriate designations) whether the abstract is for platform or poster presentation and the appropriate category (Biological, Materials, Educational, etc.).

STUDENTS: Please indicate clearly on the Abstract Submission Form whether or not the platform presentation is to be entered into the Student Competition.

PLATFORM PRESENTATIONS will be scheduled for 15 minutes, with an additional 5 minutes for questions on either Friday or Saturday morning. If you have a conflict with one of those days, consideration will be given to your needs if they are indicated on the original submission forms. Otherwise, you will be expected to present at the time scheduled by the program chair. If you need more time for your presentation (up to 30 minutes), please specify it on the submission form. Please, prepare your presentation using PowerPoint (4:3 format) and bring it to the meeting on either a flash drive or CD. A standard laptop computer running on Windows 7 and Microsoft Office 2013 will be provided.

POSTER PRESENTATIONS: Posters will be displayed on easels measuring 45” by 45”.

Texas Society for Microscopy
52nd Meeting, February 23 - 25, 2017
Waco Convention Center
Waco, TX, 76702
ABSTRACT SUBMISSION FORM

Speaker Information:

Speaker Name:                                      Phone Number:
Affiliation:                                     E-mail address:

Additional Authors and Affiliations:

Presentation Information:

Presentation Title:

Area of Interest:  Biological Sciences   Materials Science   Education   Other ______________

Type of Presentation:  _____ Podium  _____ Poster

Student Competition (oral presentations only):
Consider this presentation for the Howard J. Arnott Student Competition Award:

   _____ Yes       _____ No

Classification:  _____ Undergraduate  _____ Graduate

IN THE SPACE BELOW, indicate if you have a preference for the presentation day and/or if you need more than 15 minutes for your presentation. Please, specify the reasons behind your request(s). Every effort will be made to accommodate your request; however, we can not guarantee that all requests will be honored.

Instructions for the preparation of abstracts are on the TSM webpage, www.texasmicroscopy.org. Please send this form and a copy of the abstract to Dr. Camelia Maier (cmaier@twu.edu).
EPICUTICULAR WAXES ON LEEK (ALLIUM PORRUM L.) ORGANS DURING DEVELOPMENT. CAMELIA MAIER1 AND DUSTY POST-BEITTENMILLER2, 1Texas Woman’s University, Department of Biology, Denton, TX, and 2Monsanto, St. Louis, MO.

Epicuticular waxes (EW) on aerial organs of leek plants at different stages of development were studied by GC-MS, high resolution SEM, confocal and fluorescence microscopy. All aerial organs presented EW by GC-MS but not all of them presented crystalline wax as shown by SEM. No crystalline wax structures were observed on organ segments that were not exposed to light during development, such as stems inside the culm of leaves and overlapping leaf sheaths. Hentriacontan-16-one, odd-chain alkanes and even-chain aldehydes were the predominant classes of compounds detected in the leaf blade EW. The branched-rods and waffle-shaped patterns of EW crystals on leaf blade and ligule were replaced by mostly plates on stems and buds exposed to light, and thick truncated columns on inflorescence bracts. Weathering of crystalline structures was observed on stem surfaces as well as on the leaf blade. GC-MS analysis of EW on leek organs indicated changes in wax composition and load due to the organ developmental stage primarily, but also due to the environmental and microenvironmental factors such as light and humidity, especially inside the leek culm. Confocal microscopy along with SEM gave useful insights into the leek EW microstructure. Recrystallization studies along with fluorescence microscopy on fresh samples established that plant EW fluoresces. The natural fluorescence of EW can be used as a method of screening for wax mutants in different species.
AN INVESTIGATION ON IN VITRO CULTURE OF SUGAR BEET (BETA VULGARIS L.) USING LIGHT AND FLUORESCENT MICROSCOPY. Mandy Whiteside¹, Esther Villanueva¹, Edward Caraway¹, Nabarun Ghosh¹ and Don W. Smith², ¹Department of Life, Earth and Environmental Sciences, West Texas A&M University, Canyon, TX 79016, ²Department of Biological Sciences, University of North Texas, Denton, Texas 76203.

Sugar beet (Beta vulgaris L.) is a member of the family Amaranthaceae, subfamily Chenopodiaceae. Sugar beet roots contain 5-20% sucrose representing a major source for the sweetener industry. Rhizomania, the most devastating disease caused by BSBMV (Beet Soil Borne Mosaic Virus) and BNYVV (Beet Necrotic Yellow Vein Virus) resulted in vast decline of production in United States in the last decade. We established in vitro cultures of sugar beet for the regeneration of improved varieties and to study the pathogenesis from systemically infected tissue in culture. We excised the hypocotyl and cotyledon explants from the seedlings of Beta-1395 germinated on 1/2 MS medium and implanted them into modified MS medium. After 2 days culture, callusing was observed from the cut ends of the explants. Development of shoot was achieved by the addition of various growth factors and coconut milk (5% v/v) to MS medium. Rhizogenesis was obtained using 2 mg/L of IAA to MS medium. After three weeks of transfer, the formation of roots at the bottom of the regenerated shootlets was recorded. Using callus we established cell suspension cultures to obtain protoplasts for further experimentation. The morphogenesis process was studied using light and fluorescent microscopy. Staining the cultured cells with vital stain Evan’s Blue helped us screen the regenerative cells from suspension culture. We observed the torpedo shaped embryonic initial that exhibited characteristic fluorescence with FITC filter (Fig. 1).

Fig. 1 – Viable cells from sugar beet suspension cultures stained with fluorescein under FITC filter.
BGA Solderability Issues Due to Nickel Carbonate Contamination

JODI A. ROEPSCH

Raytheon NCS Shared Services Failure Analysis Lab, McKinney, Texas 75071

Electrical failures of an assembled board led to an investigation into root failure cause. In-circuit testing identified electrical opens at Ball Grid Array (BGA) solder bumps to the Printed Wire Board (PWB) interface. Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy (EDS), optical inspection and Fourier Transform Infrared were used to investigate this failure.

Failure was determined to be the result of poor solder connection of the BGA solder bumps to the gold plated PWB pads. Contamination was identified on the PWB pad surfaces causing the poor solderability. The cracked flaky appearance of the contaminant indicated the material was at one time in liquid form (Figure 1). A typical joint results in the SnPb solder bump wetting to the pad on the PWB by absorbing the gold plating and forming an intermetallic with the underlying nickel plating. In instances where the pads on the board contain contamination, the gold was unable to be absorbed by the solder and no solder joint was formed. Elemental analysis determined the contamination contains C, O and Ni (Figure 2). FTIR identified this material as nickel carbonate (Figure 3). The source of the nickel carbonate was isolated to the plating house but the exact cause could not be identified.

Considering the cost to manufacture this type of board, it was necessary to formulate a cleaning process in an attempt to salvage the populated boards. A significant concern with cleaning a populated board includes inducing damage to the board that could potentially go unnoticed resulting in a latent failure. This cleaning technique was deemed acceptable since the boards would only be used in test units and would not be placed in the field. Investigative studies into various acidic solutions led to success with a 10% Hydrochloric Acid solution. This solution was found to clean the pads in a reasonable amount of time. Damage was only identified from the 10% HCl cleaning process in instances when the gold plating was cracked or flaking. A microsyringe was used to isolate the acid to a contaminated pad thereby reducing the risk of damage to the board. Successful cleaning of pads allowed multiple boards to be cleaned and put back into process flow to later be installed in test units. This resulted in a significant cost savings to the program.

Figure 1: Low magnification image of contaminated pad on PWB. The bright areas contain gold and the dark areas on the pads contain nickel carbonate contamination. The contamination extends out onto the board surface.

Figure 2: EDS data suggest the presence of C, O, and Ni on the gold plated surface.

Figure 3: FTIR suggests the material is a nickel carbonate.
Spruce Tree House (Fig. 1) is one of the larger cliff dwellings in Mesa Verde National Park. Fewkes (1909) reported 114 rooms in Spruce Tree House and published photographs of Spruce Tree House as it was, before and after it was first “cleaned up.” His photos clearly show both the breathtaking architectural characteristics of this place as well as the problems of maintaining it as a safe site for the public. Fewkes (1909) described many of the rooms in detail. Speaking of Room 43 he said, “Several rooms in this part of the ruins, especially rooms 43 (Pl 9) and 44 still have roofs and floors as well preserved as when they were built.” Plate 9 contains photos of the inside of Room 43/1 (first floor) and “Main Street” where the entrance to Room 43/1 was located. The current nature of Room 43/1 and “Main Street” are shown in Figs. 2-4 taken in 2006.

Through the kindness of Professor Jeff Dean in the Laboratory for Tree-Ring Research (LTRR) I have been able to examine cores taken in 2006. The cores from timbers of Room 43/1 are especially interesting because a comparison can be made between the timbers in a 2006 photo (Figs. 3-4) with those in Fewkes photo of 1909. Clearly, there were two primary timbers upon which 13 secondary timbers rested. The secondary timbers supported numerous tertiary members, which supported fill and dirt forming the floor in Room 43/2 (Fig. 3-4). The timbers in the 2006 photos are the same as in the Fewkes (1909) photo and thus, by extrapolation, the roof timbers are the same as the occupants left them in approximately 1300. Ten dated juniper wood cores from Room 43/1 were available in the LTRR’s collection. Seven of the ten have the following numbers of frost rings per core: 1, 2, 3, 5, 6 and 8 (Fig. 5); the other three had none. The timbers, dated by the LTRR, have beginning dates as early as 1143 and cutting dates from 1240 to 1250. Frost rings in 1149, 1154 and 1189 were each found in three cores. The 1179 frost ring is found in four cores; the earliest frost ring in Room 43/1 was in 1143, and the latest in 1209. All 29 frost rings found in the timbers of Room 43/1 are in the early wood. The individual frost rings are variable (Figs. 6-9) and each appears to chronicle a somewhat dissimilar incident. The 1179 frost ring is very narrow and is only approximately 15 cell layers thick with the frost damage extending throughout the radial dimension of the ring (Fig. 6). Other frost rings have only a limited number of aberrant cells, principally ray cells, demonstrating their frost damage. The 1162 frost ring shows that several rows of tracheids were already formed before the freeze episode occurred thus producing a “delayed early frost ring” (Fig. 8).

Frost rings were found in 70% of the cores available from Room 43/1. This percentage is substantially higher than in the overall samples from Spruce Tree House (Arnott, unpublished). Many frost rings occur in the early years of the trees that supplied the timbers for Room 43/1. However, frost rings also occur in much later annual rings, for example in the 25th, 36th, 42nd, 49th and 66th years. Fritts, et al. (1965) using dendrochronology discovered a “prolonged dry period from 1276 to 1289” and suggests that it might be a factor in the abandonment. Salzer (2000) pointed to the cooling of the climate in the 12th and 13th centuries as important in considering the factors involved in abandonment. Obviously, the occurrence of many frost rings in these timbers merits further consideration regarding the climate at the time of abandonment. The frost rings are direct evidence of weather phenomenon at the Mesa Verde site.

REFERENCES


Figures 1-4 taken in 2006. Figure 1. Site view of Spruce Tree House, Mesa Verde, Colorado. Figure 2. View of “Main Street” in Spruce Tree House. The entrance to Room 43/1 is the first “door” on the left as you look down “Main Street.” Figure 3. Roof of Room 43/1 showing one of the primaries and several secondaries. At right angles to the secondary many smaller “tertiaries” support the floor of the room above. Figure 4. Roof of Room 43/1 (the photo is almost perpendicular to Fig. 3). In this photo one can see the passageway that leads to the room above. Careful examination of the secondary beams reveals numbers and white core holes (filled). Figure 5. Examples of cores from the timbers in Room 43/1; number 213 contained 8 frost rings. Figures 6-9. Light micrographs of Core 211. Figure 6. The 1179 frost ring showing its scope. Figure 7. The 1154 frost ring showing typical rearrangement of the rays often seen in frost rings. Figure 8. The 1162 frost ring showing that several layers of tracheids were produced before the freeze occurred. Figure 9. The 1187 frost ring showing areas of cell damage which appear red in this rendition.
Regular Registration Form
THE TEXAS SOCIETY FOR MICROSCOPY
February 23 - 25, 2017

Meeting: Waco Convention Center, Waco, TX, 76702
&
Leica and FEI Workshops are hosted by the
Center for Microscopy and Imaging at Baylor University

Abstract Submission Deadline: January 20th, 2017
Hotel Reservation Deadline: January 23rd, 2017
Advance Registration Deadline: January 27th, 2017

Hotel Information:
Rate: $125/night 1 King bed
Follow link on first page or contact:
Courtyard by Marriott; Waco
101 Washington Ave
Waco, TX, 76701
Tel: 254-752-8686

Complete and mail this form along with payment to:
David Yan, TSM Secretary
Dept. of Materials Science and Engineering
University of Texas at Arlington
Arlington, Texas 76019
Email: davidy@uta.edu

MAKE CHECKS PAYABLE TO THE TEXAS SOCIETY FOR MICROSCOPY. PAYMENT MUST BE SENT WITH THE REGISTRATION FORM. NO CREDIT CARDS ACCEPTED.

Name: ____________________________________
Affiliation: ________________________________
Address: ___________________________________
Phone: ____________________________________
E-mail: ____________________________________

Student* Anticipated Graduation Date: ____________

Area of Interest:
☐ Biological Sciences
☐ Material Sciences
☐ Other___________

☐ I will present a paper/poster
☐ I will not present a paper/poster

☐ I plan to attend the Workshop ONLY (free of charge)
☐ I plan to attend the Workshop & Meeting
☐ I DO plan to attend Thursday night’s social reception
☐ I DO NOT plan to attend Thursday night’s social reception

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<th>Early Registration By 1/27/17</th>
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| Membership Dues         |                                |                                |
|-------------------------|                                |                                |
| Regular Member          | $50                            | $50                            |
| Student Member          | $10                            | $10                            |
| Donation (tax deductible, optional) | $10                            | $10                            |

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Grand Total: _______________________

* If participating in the Howard J. Arnott student competition award, please fill out the appropriate application to be considered for judging.
Exhibitor Registration Form
THE TEXAS SOCIETY FOR MICROSCOPY
February 23 - 25, 2017

Meeting: Waco Convention Center, Waco, TX, 76702
&
Leica and FEI Workshops are hosted by the
Center for Microscopy and Imaging at Baylor University

Abstract Submission Deadline: January 20th, 2017
Hotel Reservation Deadline: January 23rd, 2017
Advance Registration Deadline: January 27th, 2017

Hotel Information:
Rate: $125/night 1 King bed
Follow link on first page or contact:
Courtyard by Marriott; Waco
101 Washington Ave
Waco, TX, 76701
Tel: 254-752-8686

Complete and mail this form along with payment to:
David Yan, TSM Secretary
Dept. of Materials Science and Engineering
University of Texas at Arlington
Arlington, Texas 76019
Email: davidy@uta.edu

MAKE CHECKS PAYABLE TO THE TEXAS SOCIETY FOR MICROSCOPY. PAYMENT MUST BE SENT WITH THE REGISTRATION FORM. NO CREDIT CARDS ACCEPTED.

Name: ____________________________________________
Affiliation: _______________________________________
Address: _________________________________________
Phone: ___________________________________________
E-mail: ___________________________________________

Area of Interest:
☐ Biological Sciences
☐ Material Sciences
☐ Other___________

☐ I will present a paper/poster
☐ I will not present a paper/poster

☐ I DO need electricity for my table
☐ I DO NOT need electricity for my table

☐ I DO plan to attend Thursday night's social reception
☐ I DO NOT plan to attend Thursday night's social reception

Registration Options
Donation for the meeting (optional): $_____
Corporate Membership Dues: $300
Grand Total: $_____

Method of Payment: Check ☐ Cash ☐

Note: All donations to TSM are tax deductible. Receipts will be available.

Meeting Registration includes table and electrical outlet. Corporate Membership includes one (1) Regular Registration. Additional participants should use additional Regular Registration forms to register for the meeting.
APPLICATION FOR MEMBERSHIP OR CHANGE OF ADDRESS
TEXAS SOCIETY FOR MICROSCOPY

Please type or print legibly. Fill out completely. Please note that membership is for Jan. – Dec. for each year.

Check one:  [ ] I am applying for new membership in T.S.M.  
[ ] I am a member and wish to change my address.  
[ ] I am a STUDENT and wish to upgrade to REGULAR membership.

Are you a member of MSA?  [ ] Yes  [ ] No

Name (last name first) _________________________________________________________________

Institution __________________________________________________________________________
(Please write out completely. We’ll abbreviate it.)

Department __________________________________________________________________________
(Please write out completely. We’ll abbreviate it.)

Street Number/
P.O. Box ___________________________________________________________________________

City __________________________________________ State ________________

Zip Code _______________________________________________

Work Phone (______) ________________________ Extension ______________

Email Address ________________________________________________________________________

Home Phone (______) ________________________ Fax No. (______) __________________________

Category of Membership (circle only one):

Regular Corporate Honorary Library Student

Broad field of interest in which you utilize microscopy (circle only one):

Cell Biology Chemistry/Biochemistry Education/Teaching Environment
Geology Industry Materials Science Medicine/Vet. Medicine Microbiology/Virology
Plant Biology Zoology Sales Service/Repair Other _____________

Applicants for membership should include a check or money order for one year’s dues with application
(Regular: $50; Student: $10; Corporate $300).

Applications for new membership, or for upgrading of membership category from STUDENT to
REGULAR, will be presented to the Executive Council at their next meeting for their approval (majority
vote). The applicants will then be presented by the council to the membership at the next general business
meeting for their approval (majority vote). Applicants will be added to the membership rolls at this time.

Please return to: David Yan, TSM Secretary
Box 19031, 501 W. First Street, ELB 231, Arlington, TX 76019
Email: davidy@uta.edu
APPLICATION FOR STUDENT TRAVEL SUPPORT FOR TSM MEETING ATTENDENCE

TSM will support student attendance at the TSM meeting by giving $50 to each student member who presents a paper or poster and requests support. Students must request this award by completing this application and submitting the abstract and this application by the abstract deadline, January 20th, 2017.

THIS APPLICATION MUST BE RECEIVED BY THE PRESIDENT BY THE ABSTRACT DEADLINE, JANUARY 20th, 2017

E-MAIL ADDRESS:
COLLEGE / UNIVERSITY/ HS:
DEPARTMENT:
MAILING ADDRESS:
FACULTY ADVISOR NAME:
TITLE OF ABSTRACT SUBMITTED:

Are you currently a member of TSM? Yes No

Have you submitted a copy of your application for membership with this application? Yes No

Do you wish to be considered for the Howard J. Arnott best platform presentation award? Yes No

Please attach a copy of your abstract and get your faculty advisor’s signature in support of this application.

FACULTY ADVISOR SIGNATURE ___________________________ Date _____________

You may e-mail this application to: LHanson@mail.twu.edu or send a hard copy to the address below. Incomplete applications will not be accepted. You will be contacted when the award is made.

Dr. Laura Hanson
Department of Biology
Texas Woman's University
Denton, TX 76204-5799
Program Objective and Funding Information

The Texas Society for Microscopy (TSM) Small Grant Program is intending to provide undergraduate and graduate students and their mentors with valuable microscopy educational experiences. By encouraging close working relationships between students and faculty, the program promotes scientific excellence and achievement through hands-on learning.

The program awards grants of up to $1,500 for a graduate student proposal and $750 for an undergraduate student proposal. Mentors could use the funds for materials and standard microscopy equipment necessary to complete a specific research project, student stipends and limited travel expenses associated with research.

Eligibility and Requirements

1) While membership in TSM is not a requirement for applying for funding, it becomes necessary for both the student awardee and mentor at the time of award.

2) Funding is restricted to proposals from student-mentor whose research is performed at a Texas institution.

3) Student applicants must be enrolled full time in an accredited high school, college or university and use microscopy for research project in areas of life sciences, materials science, education, and any other areas involving use of microscopic techniques.

4) Student applicants must have a 3.0 grade point average in the last year prior to application. An official transcript must be submitted with the application.

5) The students must provide two letters of support, one from their mentor and the other one from another professor who is familiar with the students’ ability to use microscopy for their research.

Application and Submission Instructions

Deadline is January 31 of each year. The award will be made public at the TSM spring meeting. Proposals should be submitted by e-mail to davidy@uta.edu.

More information and application materials at:
http://www.texasmicroscopy.org/root/Smallgrant.html
APPLICATION
20__ TSM SMALL GRANT PROGRAM

Date: _____________________________
Name: ______________________________________________________________________
Preferred Phone #: _____________________ E-Mail Address: _______________________
Mailing Address: ______________________________________________________________________

University/CC/HS Attending: _______________________________________________________
Student Classification in the Fall of 20__ (Check one):
University/CC: Junior Senior Master’s Doctoral
HS: Sophomore Junior Senior
Expected date of graduation: _______________________
Major field of study: __________________________________
Current enrollment: Full-time Part-time
(Generally, full-time enrollment is 12 hours for UG and 6 hours for graduate students.)
Number of hours completed to date ______ GPA ________
(Attach copy of most recent transcripts)

Title of proposed project: _________________________________________________________
Amount of funding requested from TSM: $______________

Attach two (2) letters of recommendations
Attach your CV and your mentor’s CV

I certify that I am a full-time student and that all information provided in this application is true
to the best of my knowledge. If I am chosen to receive a TSM small grant, I agree to observe and
abide by the conditions of the award.

__________________________________________________________________________
Signature of student applicant Date
__________________________________________________________________________
Signature of student’s mentor Date