MEETING INFORMATION

The 54th Meeting of

THE TEXAS SOCIETY FOR MICROSCOPY

"Embracing All Forms of Microscopy"

February 21st through 23rd, 2019

The University of Texas at San Antonio
San Antonio, Texas

Workshops will be held at the UTSA Kleberg Advanced Microscopy Center
One UTSA Circle, San Antonio, Texas 78249

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 (students) or 20 minutes (all others), including questions. In addition, students can compete for monetary prizes (platform presentations only). Further information on abstract preparation, online registration and abstract submission can be found on the TSM website:

http://www.texasmicroscopy.org

Abstracts must be received by
Friday, January 18, 2019

Lodging Information

Staybridge Suites NW Near Six Flags Fiesta
6919 North Loop 1604 West
San Antonio, Texas 78249
(210) 691-3443
Single room: $95

CLICK HERE for reservation with special group rate

Hotel Reservation Deadline:
Wednesday, February 6, 2019

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 through phone.

Registration Information

What's Included

- Workshop and free lunch on Thursday
- Guest Speakers
- Vendor Exhibits
- Platform Presentations
- Poster Session
- Thursday Night's Social Reception
- Friday & Saturday Breakfast
- 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.

Registration and abstract submission are available on our website:
http://texasmicroscopy.org/

The deadline for advanced registration is Friday, February 1, 2019

Workshop – Thursday, Feb 21, 2019

Workshops at UTSA Kleberg Advanced Microscopy Center

1. In situ TEM (sponsored by Protochips)
2. Confocal Laser Scanning Microscopy (sponsored by Zeiss)
3. Sample Preparation for SEM (UTSA)

Each workshop is offered twice (9-12 and 1-4). Please register by sending choice of workshops and time to:
josefina.arellano-jimenez@utsa.edu

54th meeting of the
THE TEXAS SOCIETY FOR MICROSCOPY
February 21st – 23rd, 2019

Additional information

Invited Speakers:
We are pleased to announce the following invited speakers at the TSM meeting:
Life Sciences: Dr. Jenny Hsieh; The University of Texas at San Antonio; *"Precision models of human neural development and disease"*
Material Sciences: Dr. Miguel Yacaman; The University of Texas at San Antonio; *"Modern electron microscopy a nanolab rather than an electron optical instrument"*

Social Reception on Thursday: There will be a reception on Thursday evening the 21st of February 2019 at 7 p.m. at Palenque Grill (La Cantera, 15900 La Cantera Pkwy, San Antonio, TX 78256) which is within walking distance from the hotel (directions and further details will be sent out to all participants at the beginning of February). This will be a great opportunity to meet and talk to colleagues, friends and vendors and to enjoy traditional Mexican food.

Food: Continental breakfast will be provided on Friday and Saturday at the venue. Lunch will be provided on Thursday (for workshop participants) and on Friday at the venue. If you have special food requests (vegetarian, vegan, etc.) please send an email to AHammett1@twu.edu.

We look forward to seeing you in San Antonio!

Amy Jo Hammett, Program Chairperson
Josefina Arellano Jimenez, Program Chairperson-elect

TEXAS SOCIETY FOR MICROSCOPY

54th Meeting, February 21-23, 2019

The University of Texas at San Antonio
One UTSA Circle, San Antonio, Texas 78249

CALL FOR PAPERS

The deadline for submission of abstracts for the 2019 Texas Society for Microscopy (TSM) meeting is **Friday, January 18, 2019**.

Registration and abstract submission are available on our website:
http://texasmicroscopy.org/

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 online submission whether the abstract is for platform or poster presentation and the appropriate category (Biological, Materials, Educational, etc.).

STUDENTS: Please indicate during online registration whether or not the platform presentation is to be entered into the Student Competition. Students can apply for student travel support during online registration. Application for travel support for students will be available during online registration. The TSM supports students that live within 50 miles of the venue with $50 and students that live more than 50 miles from the venue with $100.

PLATFORM PRESENTATIONS: will be scheduled for 10 minutes (students) or 15 minutes (all others), 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. In such a case please contact the program chairperson (AHammett1@twu.edu). Otherwise, you will be expected to present at the time scheduled by the program chair. 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. Alternatively, you may also bring your presentation on your own computer.

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

TEXAS SOCIETY FOR MICROSCOPY
SAMPLE ABSTRACT

EPICUTICULAR WAXES ON LEEK (*ALLIUM PORRUM* L.) ORGANS DURING DEVELOPMENT. CAMELIA MAIER[ς1] AND DUSTY POST-BEITTENMILLER[2], [1]Texas Woman's University, Department of Biology, Denton, TX, and [2]Monsanto, 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.

TSM – Model of Abstract with Figure

AN INVESTIGATION ON *IN VITRO* CULTURE OF SUGAR BEET (*BETA VULGARIS* L.) USING LIGHT AND FLUORESCENT MICROSCOPY. Mandy Whiteside[1], Esther Villanueva[1], Edward Caraway[1], Nabarun Ghosh[1] and Don W. Smith[2], [1]Department of Life, Earth and Environmental Sciences, West Texas A&M University, Canyon, TX 79016, [2]Department of Biological Sciences, University of North Texas, Denton, Texas 76203.

Sugar beet (*Beta vulgaris L.*) is a member of the family *Ama- ranthaceae*, 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 Ne- crotic 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 morphogen- esis 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).

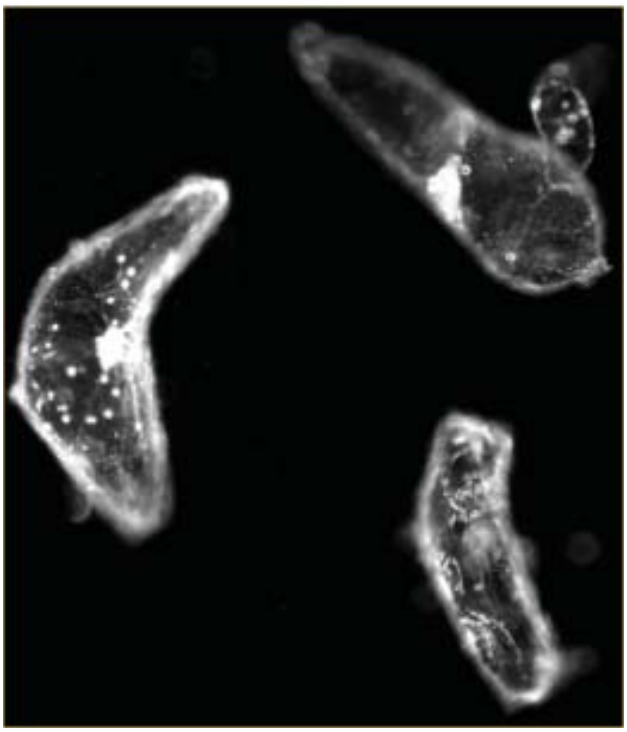

Fig. 1 – Viable cells from sugar beet suspension cultures stained with fluorescein under FITC filter.

TSM – MODELS OF LONG ABSTRACTS (ONE-PAGE AND TWO-PAGE ABSTRACTS WITH FIGURES

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.

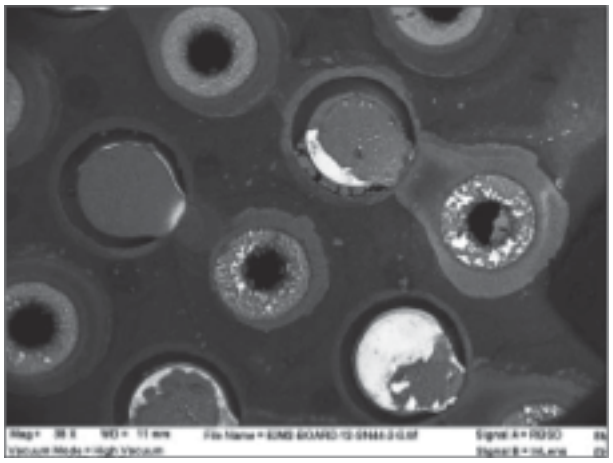

Figure 1: Low magnification image of contaminated pad on PWB. The bright areas contain gold and the dark areas on the pads contain nickel carbonate contamination. The contamination ex- tends out onto the board surface.

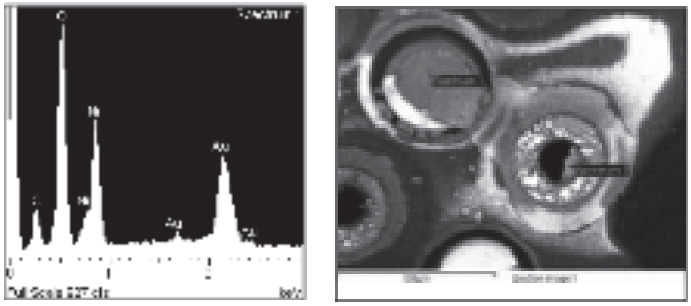

Figure 2: EDS data suggest the presence of C, O, and Ni on the gold plated surface.

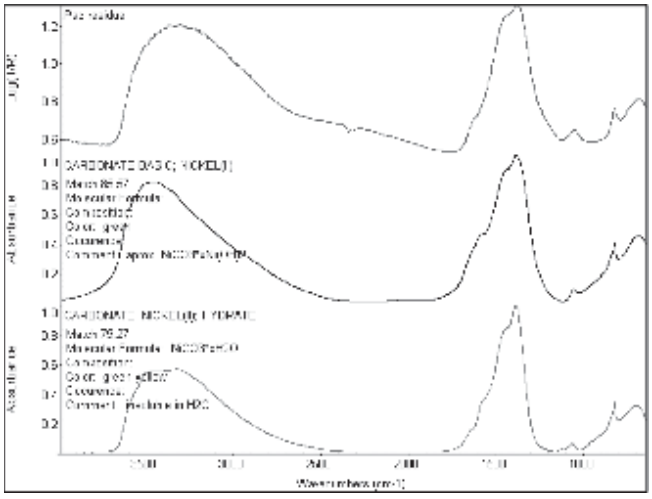

Figure 3: FTIR suggests the material is a nickel carbonate.