

The National Society for Histotechnology Presents

Application and Practice of Hard Tissue Histology Forum

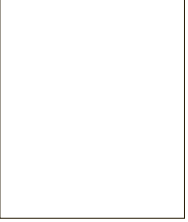
Saturday, August 18, 2012 in Bethesda, MD | 8:00 am – 5:00 pm | Earn 7.5 Contact Hours



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8850 Stanford Blvd. | Suite 2900
Columbia, MD 21045
PH. 443-535-4060 | www.nsh.org



Lodging

Doubletree by Hilton: 8120 Wisconsin Ave, Bethesda, MD 20814

Registrants are responsible for hotel / travel arrangements. We have secured a small block of rooms at the discounted group rate of \$99 per night plus applicable taxes. To make reservations call 1-800-222-TREE or 301-652-2000 and inform the agent that you are with the NSH Hard Tissue Forum. NSH cannot guarantee the rate after the hotel deadline of July 18, 2012 or once the block is sold out.

Driving to the Forum

The Doubletree is located in Bethesda, MD convenient to the Washington, DC Metro rail system. For those driving convenient parking for overnight guests is available on Friday and Saturday nights for \$10.00. For directions visit the hotel website, http://www.doubletreebethesda.com/map_and_directions/.

Flying to the Forum

The hotel is just 15 miles from Ronald Reagan Washington National Airport (DCA); Only 27 miles from Washington Dulles International Airport (AD); and 38 miles from Baltimore Washington International Airport (BWI). Shuttle service from the airport can be booked with Maryland Shuttle (www.marylandshuttle.com) or Super Shuttle (www.supershuttle.com).

Cancellation/Substitution Requests

All cancellations must be received in writing by July 27, 2012 to receive a full refund. Cancellations received after July 27, 2012 and no shows to the forum are non-refundable. Substitutions submitted in writing are accepted at any time.

Contact the NSH Office at 443.535.4060 or histo@nsh.org with any questions or concerns.

Why Should I Attend?

The NSH Hard Tissue Committee is proud to present a one day Hard Tissue Forum. Building on the success of the 2010 forum which focused on theory, this all day event will be an interactive day focused on applications and new technologies. Join us as we seek to further our knowledge and understanding of the histology and analysis of bone. How this information can better serve in the diagnosis of bone related diseases and the efficacy and safety of therapeutic treatments.

Registration Fees: Member: \$139 Non Member: \$159

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**The National Society for Histotechnology Presents the
Application and Practice of Hard Tissue Histology Forum**

Hard Tissue Histology: An Historical And Current Perspective of Microtomy Technique

Presented by Jack L Ratliff, BA, Owner, Ratliff Histology Consultants & Chairman, Hard Tissue Committee National Society for Histotechnology

The evolution of hard tissue histology begins with the introduction of micro-technique, using a simple razor to produce the first histological sections as part of the development of the light microscope. As we next make our way through the beginnings of tissue processing to provide specimen consistency and the addition of color to contrast micro-anatomy, we then turn our attention towards the development of automation in support of micro-technique and its relation to a variety of tissue types. In regards to hard tissue histology, we easily discover how the development of resins/plastics plays a critical role as a support media for hard tissues such as bone and the evaluation of biomaterials and medical device implants. Upon conclusion of this short journey we find ourselves at the present day and looking ahead to the not so distant future where non-contact infra-red lasers could represent the next and possible final frontier of histology! This workshop will detail the creation of the earliest microtomy devices and their evolution to the present day where we will identify current methods and equipment used to section a wide variety of soft and hard tissue histology specimens. We will then focus to compare and contrast these conventional methods and equipment with that of non-contact infra-red lasers that have been designed for sectioning, micro-structuring and imaging of biological tissue and various materials. This workshop will lay the foundation for the Hard Tissue Forum where unique demonstrations and flavorful presentations that follow will represent over 300 years of research, development, and technological innovation of current equipment and micro-technique as associated with hard tissue histology.

Skeletal Analysis With MicroCT: What You Need To Know And Why You Need To Know It

Presented by Daniel S Perrien, Ph.D., Research Assistant Professor, Department of Orthopaedics & Rehabilitation, Vanderbilt Center for Bone Biology & Vanderbilt University Institute for Imaging Sciences

During the last decade, micro computed tomography (μ CT) has become one of the most commonly used technologies for rapid skeletal analysis, and its inclusion in publications in the bone field is nearly a necessity. This x-ray based imaging instrument combines the principles of traditional CT with those of microscopy to produce three-dimensional reconstructions of bones and other specimens at resolutions as fine as 0.5 μ m. MicroCT can also be an excellent complement to hard tissue histological techniques and other tools in the search for skeletal phenotypes. This workshop will demonstrate standard image acquisition techniques via a prepared video and live demonstration of basic analytical techniques and production of representative images from previously acquired images. Topics will include the advantages and limitations different scanning and analytical techniques, understanding of standard data sets and preparation of publication quality images.

Bone, Biomaterials And Bugs: Resin Microtomy And The Rotary Microtome

Presented by Damien Laudier, BS, HTL(ASCP), QIHC, Owner, Laudier Histology

This workshop will review the basics involved in producing good quality thin plastic sections from a variety of hard/difficult tissues and materials, embedded in a variety of resins, using a rotary microtome. The similarities and differences between paraffin and various resins will be discussed, as will the shear stress mechanics of resin sectioning. Specialized block holders, knives and other tools involved in resin microtomy will be addressed. A heavy-duty rotary microtome will be on-site and attendees will have the opportunity to receive hands-on instruction in thin section resin microtomy technique, as well as a tutorial on how to properly evaluate sections and discern artifact associated with resin microtomy. Workshop participants are highly encouraged to bring their own problematic resin blocks for a personalized evaluation.

Ground Section Microtomy Techniques (Parts I & II)

(PART I) by Joe Tabeling, president, Delaware Diamond Knives (DDK) & Jack L Ratliff, BA, Owner, Ratliff Histology Consultants & Chairman, Hard Tissue Committee – National Society for Histotechnology; (PART II) Linda Durbin, Owner, EXAKT USA & Robert A Skinner, UAMS

The rotary microtome has a storied legacy as the premier technology for routine microtomy of thin histological wax, frozen and resin embedded specimens. This technology has conveniently proven itself as a traditional mainstay in histology over the past three (3)

centuries, however, it is not without limitations. In fact, the inability to adequately section certain types of tissue in specific microtomy planes (i.e. transverse sections of long bones), the introduction of mechanical stresses during sectioning and the equipment limitation with regards to specimen size are of the more notable limitations that immediately come to mind. Even with the design of larger microtome versions to compensate for larger specimen sizes and reduce vibrations during sectioning, one will easily find today the absence or elimination of this equipment; and with the development and technological evolution of medical device implants over the past century, one will also experience a difficulty or inability to cut tissues containing a variety of these implantable materials (i.e. ceramics, metals, etc.), even though these specimens have been prepared with resin embedding methods to provide enhanced support and stability. With diamonds being labeled as one of the hardest if not the hardest materials on this planet, it is easy to conceive that they have the ability to cut through virtually anything! This workshop will demonstrate the use of a diamond studded wire and a diamond studded band saw blade as viable tools for saw-sectioning a wide range of specimens with regards to size and the presence of implantable devices that limit the sectioning ability of conventional thin section microtomy equipment. Since the primary action is of a gentle saw-sectioning nature, both specimens and material implants are less subjected to mechanical stress, as compared to the forces associated with conventional thin section microtomy. In fact, microstructure and physical properties are better retained and diverse composite samples are cut or sectioned easily. While this workshop will demonstrate the sectioning techniques of two similar pieces of equipment, it will also address two very different manual and precision methods for grinding and polishing these sections down to a desired thickness, so that proper histological staining and evaluation can occur.

New Results In Laser Sectioning For General Histology, Tissue Engineering, Medical Device Implants And Industrial Analyses

Presented by Heiko Richter, Ph.D., Sales & Product Management, Rowiak GmbH

Conventional sectioning methods for histological analyses require a careful navigation throughout a variety of techniques. Whether it's cutting frozen sections for fresh tissue analysis or the more highly technical and time challenging resin sectioning techniques' for the evaluation of medical device implants; histological evaluation demands the convenience and precision of equipment to accomplish these tasks in an efficient manner and with minimal damage to specimen morphology. This also applies to industrial applications and especially when looking into quality control manufacturing. In any given laboratory or facility, equipment purchases and technician training easily become burdensome expenses, especially when both can become unavailable with minimal notice. In fact, for a laboratory or facility to maintain a competitive edge, it is necessary for both technicians and equipment to have flexible capabilities. While a number of specialty equipment has been designed and manufactured over the past 300 + years to compliment the variety of sectioning techniques, few designs have yielded the ability of a single sectioning unit to accomplish multiple tasks. . . .until now! This workshop will introduce and demonstrate a non-contact laser sectioning technology for use with multiple histological applications to produce sections from a variety of soft and hard tissue specimens. Participants will witness for the first time in North America a machine requiring a minimal level of understanding that is capable of performing a variety of applications in support of histological and industrial analyses.

Histomorphometry of Bone: A Quantitative Description of Bone Histology Using Sub-Micron Resolution Optical Microscopy

Presented by Nathanael H Reveal, CEO, BIOQUANT Image Analysis Corp.

Bone histomorphometry is the quantitative description of bone histology. Using the sub-micron resolution of optical microscopy and the specificity of fluorescent, chemical and immunohistochemical stains, bone histomorphometry is uniquely qualified to describe the cellular activity that controls skeletal health. Specialized histomorphometry software like BIOQUANT OSTEO makes it easy to rapidly extract a wide range of quantitative data while minimizing repetitive stress. In support of histomorphometry, tools from clinical digital pathology are inspiring rapid growth in tools for research digital pathology. Research digital pathology collects images intended for quantitative results, not simply qualitative judgments. It uses a wider range of imaging techniques than clinical digital pathology including fluorescence, polarized light, and darkfield imaging in addition to brightfield imaging. BIOQUANT will offer tutorials in automated bone histomorphometry with the BIOQUANT OSETO software and in imaging for quantitative analysis with the new OSTEOIMAGER, a research digital pathology scanner. As an added bonus, we'll tell you how to start exploring digital research pathology for free with your own laboratory equipment!

2012 Hard Tissue Registration Form

NSH Member?

Member Registration: (\$139.00) Non-Member Registration: (\$159.00)

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____

Zip Code: _____ Country: _____

Phone: (_____) _____ - _____

Email: _____

(required for registration)

Payment Information:

(Please note that funds must be in US Dollars on a US Bank)

Check Enclosed \$ _____

Purchase Order #: _____

Charge my credit card \$ _____ (Visa, Mastercard, or American Express)

Name on Card: _____

Cardholder Signature: _____

Cardholder Email/Phone: _____

CC #: _____

Exp Date: _____ CVV #: _____

Send In Your Registration! Fax: (443) 535-4055; Online: www.nsh.org;

Mail: 8850 Stanford Blvd., Suite 2900, Columbia, MD 21045