

Where Science Meets Innovation

NANS²-NIC: A Joint Meeting



June 25–29, 2016

Baltimore, MD

Sheraton Inner Harbor



CNS

Jointly provided by the Congress of Neurological Surgeons, North American Neuromodulation Society, and Neural Interfaces Conference.

Meeting Overview

The NANS²-Neural Interfaces joint meeting has been developed through a collaboration between the North American Neuromodulation Society (NANS) and the Neural Interfaces Conference (NIC) Steering Committee. This joint scientific conference will be held June 25–29, 2016, at the Sheraton Inner Harbor in Baltimore, MD.

The conference will bring together a diverse group of scientists, engineers, and clinicians representing the basic and applied science of neural interfaces and neuromodulation. The goal of the conference is to foster collaboration between these groups and to provide an in-depth overview on the research and development of implantable medical devices and techniques along with their eventual integration into clinical practice.

The joint conference will provide a forum for the presentation and discussion of state-of-the-art developments in areas that include neural stimulation, neural plasticity, functional electrical stimulation, deep brain stimulation, auditory prosthesis, cortical prosthesis, peripheral nerve interfaces, biomaterials, microelectrode array technology, brain computer/machine interfaces, and other emerging areas. We also anticipate participation by representatives from federal government agencies as well as industry, creating excellent opportunities for sharing new ideas and networking.

This event incorporates the 42nd NIC. The NIC has a long history of working on key problems for advancing neural prosthetics and interface technology and began as an annual “NIH Neural Prosthesis Workshop” in the 1970s as a NIH contractors meeting.

Saturday, June 25, Program Highlights

7 am–8 am
Registration

8 am–10 am
Opening Plenary and Welcome (PL01)

The Risk of Not Intervening on Pain
Fresh Outlook on FBSS
Data for ESI/Injections
IT Therapy for Pain
Clinical Evidence-Stimulation: Tonic
Clinical Evidence-Stimulation: Burst

10–10:30 am
Break

10:30–Noon
Plenary Session (PL02)
Clinical Evidence-Stimulation: HFS
Clinical Evidence-Stimulation: DRG
Clinical Evidence-Stimulation: PNS
Clinical Evidence-Stimulation: Intracranial
Panel Discussion

Noon–1:30 pm
Lunch

1:30–3 pm
Plenary Session (PL03)
Which Spine MRI Findings Are Relevant for Pain?
Science to Clinical Research: Bridging the Gap
Neuromodulation at the Cellular Level
Electrical Field Modeling in Neuromodulation
Closed Loop/ECAPS

3–3:30 pm
Break

3:30–5 pm
Plenary Session (PL04)
History and Innovation Neuromodulation
Panel Discussion: Choosing Among Modalities
Panel Discussion: Cases, Fusion vs. SCS

6–8 pm
Opening Reception at the Hyatt Regency Baltimore



Sunday, June 26, Program Highlights

7–8 am
Sponsored Breakfast

8 am–5 pm No CME is awarded for these sessions.

Residents and Fellows Cadaver Course (RFS)

This event combines didactics on approved clinical applications of neuromodulation strategies, with practical hands-on training in a cadaver laboratory. This premier training opportunity is open to all residents and fellows, and offers the opportunity to learn cutting-edge neuromodulation techniques and principles of implementation in clinical practice. Techniques explored include SCS trial and permanent operations and maintenance. Participants will be under the direction of experienced faculty. Course faculty will also provide personalized lectures in small groups to discuss the nuances of integrating neuromodulation into your practice, including referral networks. They will highlight contract and practice structure, as well as coding and reimbursement. This workshop's intent is to foster a platform for multidisciplinary networking opportunity and create excitement in the neuromodulation space through shared lectures and content.

Certificate of Attendance Neuromodulation Workshop (COA)

This training opportunity provides an educational platform to educate and train physician providers on the evidence-based and appropriate use of implantable therapies for pain management (spinal cord stimulation) for participants who are outside of formal fellowship training. Open to those who are already in practice, the course will consist of two educational parts—a hands-on cadaver lab and scheduled didactics, including small group lectures with faculty focusing on integrating neuromodulation into your practice and referral networks. The faculty will also highlight contract and practice structure, as well as coding and reimbursement.

NIC/Industry Cadaver Workshop (NIC)

This year, we are proud to introduce a new, collaborative cadaver workshop with NANS, NIC, NIH, and Industry participation, focused on **Emergent Technology and Innovation in Neuromodulation**. In the morning, a series of presentations from the scientific and engineering community will present the latest approaches to technology advancement in the neural interface field, cutting-edge applications of neuromodulation to pressing clinical problems (such as spinal-cord injury), and an NIH-led discussion of methodologies for the coordination and dissemination of neural data relevant to these emergent technologies. In the afternoon, workshop participants will have the opportunity to obtain hands-on experience with the latest neuromodulation technology on the market. Industry members will be on hand to demonstrate and discuss products, implantation methods, and engineering design. Participants will receive hands-on experience led by distinguished physicians on human nervous system anatomy, demonstrations of neuromodulation implantation, and answers to questions. This session is designed for NIC members and interested participants from the clinical neuromodulation community. The focus is on providing hands-on access to technology and anatomy in real-time, with a low ratio of faculty to participants.

6–8 pm
Reception at Visionary Art Museum

Monday, June 27–Tuesday, June 28, Program Highlights

Monday

7–8 am
Registration

8–8:15 am
NIC Opening Session

8:15–9:45 am
Plenary Session (PL05)
Targeted Neuroplasticity I

9:45–10 am
Break

10–11:10 am
Plenary Session (PL06)
Targeted Neuroplasticity II

11:10–11:35 am
Keynote

Moving from Phenomena to Function—How Will Plasticity Improve Lives?
Naomi Kleitman, PhD, Craig Neilsen Foundation

11:35–Noon
Platform Presentations (PF01)

Noon–1:30 pm
Sponsored Lunch

1:35–3:15 pm
Plenary (PL07)
New Stimulation Paradigms for Pain

3:15–6 pm
Poster Session and Mixer (PS01)
Cash Bar
No CME available

8 am–3:30 pm

Device Access Workshop

The workshop will analyze the barriers that are currently preventing the widespread translation of innovative Class III neuromodulation devices into the hands of physicians and patients. The session will incorporate case studies focusing on various ideas and medical devices that have either successfully reached or failed to reach patients as a way to highlight the ease or difficulty devices go through from clinical trial to patient access. This workshop is aimed at formulating potential strategies and recommendations for overcoming barriers facing neuromodulation devices. (*Attendance at this workshop is by invitation only. No CME will be granted for this session.*)

Tuesday

7–8 am
Registration

8–9:30 am
Plenary Session (PL08)
Closed Loop DBS for Depression: Advantages, Disadvantages, and Design Considerations

9:30–9:45 am
Break

9:45–11:30 am
Plenary Session (PL09)
Autonomic/Peripheral Neuromodulation Devices: Existing and Emerging Therapies

11:30–Noon
Platform Presentations (PF02)

Noon–1:30 pm
Box Lunch

Tuesday, June 28–Wednesday June 29, Program Highlights

Tuesday *continued*

12:30–1:30 pm

Breakout 1 (B01)

Lost in Translation? A Discussion of Present and Future Nonclinical and Clinical Assessments for Devices

Breakout 2 (B02)

Competing Effectively for SBIR/STTR Funding in Neural Engineering

1:30–3 pm

Plenary (PL10)

Development of an Optimal Somatosensory Neural Interface

3–3:15 pm

Break

3:15–4:45 pm

Plenary Session (PL11)

Ultra High Channel Count High-Density Recording and Stimulation—Long-Term Vision, Roadmap, and Key Technical Challenges

4:45–7 pm

Poster Session and Mixer (PS02)

No CME available

Wednesday

8–10 am

Plenary Session (PL12)

Emerging Methods of Wireless Neuromodulation

10–10:15 am

Break

10:15–Noon

Plenary Session (PL13)

Label-Free Optical Interrogation of the Nervous System

Noon–1:30 pm

Box Lunch

12:30–1:30 pm

Breakout 3 (B03)

Maximizing the Value of Neural Interface Data

Breakout 4 (B04)

Funding Neuroprotheses Technology and Translation

1:30–3:15 pm

Plenary Session (PL14)

Unconventional Neural Interfaces

3:15–3:30 pm

Closing Remarks

Tentative Faculty

Felipe Aguel, PhD	Roy Katso, PhD	Michel Maharbiz, PhD	Todd Sitzman, MD
Polina Anikeeva, PhD	Shawn Kelly, PhD	James Marshel, PhD	Vikaas Sohal, MD PhD
John Carrino, MD MPH	Sakhrat Khizroev, PhD	Helen Mayberg, MD	Florian Solzbacher, PhD
Daniel Chew, PhD	Zelma Kiss, MD PhD	Lee Miller, PhD	Peter Staats, MD
Hillel Chiel, PhD	Eran Klein, MD PhD	Quan Ni, PhD	Jennifer Sweet, MD
Eugene Civillico, PhD	Naomi, Kleitman, PhD	Sumner Lee Norman	Aiko Thompson, PhD
Ann Costello, MD	David Kloth, MD	Richard North, MD	Cris Towne, PhD
William Cusack, PhD	TK Kozai, PhD	Kevin Otto, PhD	Dustin Tyler, PhD
Dirk DeRidder, MD PhD	Girish Kumar, PhD	Joseph Pancrazio, PhD	Timothy Wagner, PhD
Timothy Deer, MD	Nick Langhals, PhD	Parag Patil, MD PhD	Douglas Weber, PhD
Steven Falowski, MD	Eric Lee, MD	Christine Payne, DO	Cristin Welle, PhD
Stephanie Fertig, MBA	Mark Lehmkuhle, PhD	P. Hunter Peckham, PhD	Tracey Wheeler, PhD
Daniel Freeman, PhD	Scott Lempka, MD	Jason Pope, MD	Alik Widge, MD PhD
Robert Gaunt, PhD	Fred Lenz, MD PhD	Lawrence Poree, MD PhD	Christopher Winfree, MD
Sara Goering, PhD	Sean Li, MD	Claus-Peter Richter, MD PhD	Jonathan Wolpaw, MD
Yun Guan, MD PhD	Richard Lieber, PhD	Patrick Rousche, PhD	Chengyuan Wu, MD
Roy Hamilton, MD	Eric Lovett, PhD	Shivkumar Sabesan, PhD	Michael Yang, MD
Salim Hayek, MD PhD	Yarden Lovnat, PhD	Mikhail Shapiro, PhD	Seung Schik Yoo, PhD MBA
Jaimie Henderson, MD	Kip Ludwig, PhD	Ashwini Sharan, MD	
Bryan Hoelzer, MD	Anita Mahadevan-Jansen, PhD	Jane Shipley	
Zachary Ives, PhD			

Meeting Details

Who Should Attend?

Neurosurgeons, anesthesiologists, cardiologists, internists, neurologists, orthopedic surgeons, physical medicine and rehabilitation practitioners, psychiatrists, psychologists, and other healthcare professionals actively involved in neuromodulation will benefit from this meeting.

Objectives

Upon completion of this program, participants should be able to

- explain the fundamentals and mechanisms of neuromodulation
- discuss the principles and management of chronic pain, especially with respect to headaches and complex regional pain syndrome
- describe the relationship between neuromodulation, rehabilitation, and biomedical engineering
- discuss the legal issues pertaining to neuromodulation treatments
- recognize new modalities and research in the expanding field of neuromodulation.

Accreditation and Credit Designation Statements

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint provider-ship of the Congress of Neurological Surgeons (CNS), the North American Neuromodulation Society, and

Neural Interfaces Conference. The CNS is accredited by the ACCME to provide continuing medical education for physicians.

Physicians: CNS designates this live activity for a maximum of 25.75 *AMA PRA Category 1 Credit(s)*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Physicians of Osteopathic Medicine—the American Osteopathic Association (AOA) accepts *AMA PRA Category 1 Credits*[™] as AOA Category 2-B credit.

Advanced Practice Providers: Advanced practice providers may self-report their credit after the completion of the meeting to receive a certificate of attendance that can be submitted to their appropriate accrediting body.

Disclosure Information

The ACCME Standards for Commercial Support requires that anyone in a position to control the content of the educational activity disclose all financial relationships with any commercial interest. Failure or refusal to disclose or the inability to satisfactorily resolve the identified conflict may result in the withdrawal of the invitation to participate in any CNS educational activities. The ACCME defines a “commercial interest” as any entity producing, marketing, reselling, or distributing healthcare goods or services consumed by, or used on, patients. It is also each speaker’s responsibility to include the US Food and Drug Administration (FDA) clearance status of any device or drug requiring FDA approval discussed or described in their presentation or to describe the lack of FDA clearance for any off-label uses discussed. Speakers from the audience are also required, therefore, to indicate any relevant personal or professional relationships as they discuss a given topic.

Disclosures will be published in the final program syllabus that will be distributed to attendees on site.

SAVE THE DATE | JANUARY 19–22, 2017



NANS 20th Annual Meeting
Caesar's Palace Convention Center
Las Vegas, NV

Meeting Details

Location

Sheraton Baltimore Inner Harbor
Room Rate: \$169/night
Reservations: 800.325.3533 or 410.962.8300.
Please ask for the NANS/NIC rate.

Registration

NANS or NIC Members: \$450
Residents and Fellows: \$200
Residents and Fellows Cadaver Course*: \$150
Certificate of Attendance Neuromodulation Workshop*: \$250
NIC/Industry Cadaver Workshop: \$150
* Must be a NANS member to register.

Limited financial support is also available via Diversity Travel Awards. Information about the awards and how to apply is available at www.neuralinterfacesconference.com/diversity.html.

Visit www.neuromodulation.org to register! There is an extra \$100 fee for on-site registrations and those processed after June 17, 2016.



Abstracts

To submit an abstract please visit <http://www.neuromodulation.org/Meetings/NANS-NeuralInterfacesJointMeeting>
Abstract submission closes May 1.

Cancellation Policy: All cancellations must be made in writing. A \$100 processing fee will be charged for all cancellations received 14 or more days before the event. Refunds will not be made under any circumstances on cancellations received after June 17, 2016. NANS reserves the right to substitute faculty or to cancel or reschedule sessions due to low enrollment or other unforeseen circumstances. If NANS must cancel the entire meeting, registrants will receive a full credit or refund of their paid registration fee. No refunds can be made for lodging, airfare, or any other expenses related to attending the conference.

NANS²-NIC: A JOINT MEETING | June 25–29, 2016

Sheraton Inner Harbor | Baltimore, MD

Please type or print clearly. Use a separate form for each registrant and duplicate as necessary.

FOR DATA USE ONLY	
Cust# _____	Mtg Ord #1- _____
Date _____	_____

Complete Name _____ First Name (for badge) _____ Credentials _____

Facility _____ Facility City/State _____

Mailing Address (Home Office) _____

City/State/ZIP _____

Phone (Home Office) _____ Fax (Home Office) _____

E-mail Address (required*) _____ Medical Specialty _____

**Electronic confirmation of your registration will be sent only to the e-mail address you provide here.*

Emergency Contact _____ Daytime Phone _____ Evening Phone _____

To register, make your selections in the boxes below and indicate the total amount in box E.

Full Meeting Registration	June 25–29, 2016		A
	On or before 6/17/16	After 6/17/16	
General	<input type="checkbox"/> \$450	<input type="checkbox"/> \$550	
Industry	<input type="checkbox"/> \$450	<input type="checkbox"/> \$550	
Student Trainee	<input type="checkbox"/> \$200	<input type="checkbox"/> \$300	
Join NANS & Register	<input type="checkbox"/> \$810	<input type="checkbox"/> \$910	
<i>Special offer includes registration and 1 year of NANS membership with full benefits, including a subscription to Neuromodulation, the journal of the International Neuromodulation Society.</i>			
Subtotal A \$			

Preconference Courses and Special Sessions	C
Certificate of Attendance Neuromodulation Workshop* (COA) (Non-CME)	
Sunday, June 26, 7 am–5 pm	<input type="checkbox"/> \$250
Residents and Fellows Cadaver Course (RFS)	
Sunday, June 26, 7 am–5 pm	<input type="checkbox"/> \$150
NIC/Industry Cadaver Course (NIC)	
Sunday, June 26, 7 am–5 pm	<input type="checkbox"/> \$150
Subtotal E \$ _____	
<i>*Workshop participants are selected by an application and lottery process. Space is limited. Times are subject to</i>	

Session Selection	(For session codes, see pages 3–7)			B
Please check each session you plan to attend.				
Saturday, June 25	Tuesday, June 28	Wednesday, June 28		
<input type="checkbox"/> 8–10 am PL01	<input type="checkbox"/> 8–9:30 am PL08	<input type="checkbox"/> 8–10 am PL012		
<input type="checkbox"/> 10:30 am–Noon PL02	<input type="checkbox"/> 9:45–11:30 am PL09	<input type="checkbox"/> 10:15 am–12 pm PL013		
<input type="checkbox"/> 1:30–3 pm PL03	<input type="checkbox"/> 11:30 am–12 pm PF02	<input type="checkbox"/> 12:30–1:30 pm B03		
<input type="checkbox"/> 3:30–5 pm PL04	<input type="checkbox"/> 12:30–1:30 pm B01	<input type="checkbox"/> 12:30–1:30 pm B04		
Monday, June 27	<input type="checkbox"/> 12:30–1:30 pm B02	<input type="checkbox"/> 1:30–3:15 pm PL14		
<input type="checkbox"/> 8:15–9:45 am PL05	<input type="checkbox"/> 1:30–3 pm PL10			
<input type="checkbox"/> 10–11:10 am PL06	<input type="checkbox"/> 3:15–4:45 pm PL11			
<input type="checkbox"/> 11:35 am–Noon PF01	<input type="checkbox"/> 4:45–7 pm PS02			
<input type="checkbox"/> 1:35–3:15 pm PL07				
<input type="checkbox"/> 3:15–6 pm PS01				

Special Requests	D
<input type="checkbox"/> I have special needs. Please contact me. (SA)	<input type="checkbox"/> I do not wish to have my name and contact information included in the printed attendee list. (DIS)
<input type="checkbox"/> I will need vegetarian meals. (SDV)	

Total Amount Due	E
Please review your registration form prior to completing this box.	
Total Amount Due A + C = \$ _____	

Payment
<input type="checkbox"/> Mastercard <input type="checkbox"/> Visa <input type="checkbox"/> American Express <input type="checkbox"/> Discover <input type="checkbox"/> Check (enclosed)—payable to NANS
• A \$25 charge will apply if rebilling of the credit card is necessary. • Checks not in U.S. funds will be returned. A charge of \$20 will apply to checks returned for insufficient funds. • If you fax this form, please do not mail the original.
• I authorize NANS to charge the below listed card amounts reasonably deemed by NANS to be accurate and appropriate.

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If payment does not accompany this form, your registration will not be processed.

4 Easy Ways to Register
Online*: www.neuromodulation.org
Mail: NANS Meeting, 8735 W. Higgins Road, Suite 300,
Attn: Registration Dept., Chicago, IL 60631
Phone*: 847.375.4714 Fax*: 847.375.6492 *Credit card payment only

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