Conference Program

IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization

August 8-10, Reykjavik, Iceland

Welcome message from the Conference General Chair

It is my great pleasure to welcome you to Reykjavik for the NEMO 2018 conference!

You are attending the fifth edition of the IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization. NEMO2018 is organized by the IEEE Microwave Theory and Techniques Society.

The idea of the NEMO conference originated from the need to give special attention to the topics related to computational electromagnetics, advanced numerical techniques and optimization algorithms and strategies. These topics are becoming more and more important with the increased complexity of microwave systems, the use of new materials and technologies, and the request for availability of fast and accurate design tools. This conference aims to bring together experts and practitioners of computational electromagnetics and multiphysics for RF, microwave, and terahertz applications. NEMO conferences are expected to be ideal venues to share new ideas on numerical techniques for electromagnetic and multiphysics modeling, propose efficient design algorithms and tools, and anticipate the modeling needs of future technologies and applications. The conference is organized annually, rotating between Europe, North America, and Asia.

NEMO2018 is held in Reykjavik, Iceland, the farthest-north located capital in the world. The conference venue is Reykjavik University, which is the second largest university in Iceland, located next to a recreational area with convenient access from the city centre.

NEMO2018 will feature an exciting technical program as well as a Gala Dinner. I do hope that you will enjoy the conference and find time to explore Reykjavik as well as other parts of Iceland with its beautiful and unique nature.

Slawomir Koziel

Conference General Chair

Organizing Committee

Conference General Chair:

Slawomir Koziel (koziel@ru.is)
Reykjavik University, Iceland

Technical Program Chair:

Vincente E. Boria (vboria@dcom.upv.es)
Technical University of Valencia, Spain

Technical Program Co-Chair:

Leifur Leifsson (leifur@iastate.edu)
Iowa State University, USA

Conference Award Chair:

José E. Rayas-Sánchez (erayas@iteso.mx)
ITESO, Mexico

Conference Liaison Chair:

Adrian Bekasiewicz (bekasiewicz@ru.is)
Gdansk University of Technology, Poland

Conference Finance Chair:

Sigrun Thorgeirsdottir (sigrunth@ru.is)
Reykjavik University, Iceland

Local Arrangement Chair:

Katrin Rut Bessadottir (katrinrb@ru.is)
Reykjavik University, Iceland

Conference Secretary:

Kristjana Magnúsdóttir (kristjana@cpreykjavik.is)
CP Reykjavik, Iceland

Welcome message from the Technical Program Chairs

We are pleased to give a very warm welcome to all attendants to this fifth edition of the IEEE MTT-S International Conference on Numerical Electromagnetics and Multiphysics Modeling and Optimization, which, this year, takes place in the wonderful country of Iceland.

As all of you are well aware of, NEMO is an annual conference, specially focused on electromagnetic and multiphysics numerical modeling, as well as on design techniques and optimization tools, for high frequency (RF, microwaves and terahertz) applications. Thanks to this format, it is an ideal venue to meet colleagues working in these specific research areas, and exchange recent works and future trends in the cited topics. We do hope that the following Technical Program, summarized in the next pages, will contribute to reach all these goals.

This year, NEMO2018 has received papers from more than 350 authors (of many different countries all over the world), to whom we are deeply grateful. After a detailed and thorough review process, that has been possible thanks to the generous and excellent work of our Technical Program Committee members (that deserve our most sincere appreciation), 91 papers with high-quality technical content have been selected for presentation during the next three days.

In this NEMO edition, we will have a total number of 17 technical sessions arranged as 11 special sessions, 5 regular sessions and 1 poster (interactive forum) session. We want to make an explicit recognition to the work and support from the organizers of all convened special sessions, which has been extremely valuable for setting up the final program of this conference. All sessions will take place in Reykjavik University.

NEMO2018 participants are also strongly encouraged to attend the four key plenary talks to be delivered by very relevant selected speakers, all recognized worldwide in their respective technical expertise areas, and who are (in order of appearance): Dr. Peter Thoma (CST-Computer Simulation Technology GmbH, a Dassault Systèmes Company, Germany), Professors John W. Bandler and Natalia K. Nikolova (both from Macmaster University, Canada), and Prof. Atef Z. Elsherbeni (Colorado School of Mines, USA). Their participation in this conference edition, providing a great additional technical asset, is extremely appreciated and acknowledged.

As in previous NEMO editions, a best student paper award will be selected (and announced during the Gala Dinner) by a committee of international experts chaired by Prof. José E. Rayas (Conference Award Chair). The authors of all accepted papers will also be invited to submit an expanded version of their works, for potential publication (after following a regular revision process) in a special mini-issue of the IEEE Transactions on Microwave Theory and Techniques devoted to NEMO2018 conference.

Finally, we would like to express our most sincere gratitude to the local organizing team of NEMO2018, wisely led by Prof. Slawomir Koziel (Conference General Chair), and in particular to Dr. Adrian Bekasiewicz (Conference Liaison Chair), for all their tireless help and continuous support to our tasks as Technical Program Co-Chairs.

And last, but not least, we do thank very much all NEMO2018 conference attendants, for whom we have carefully prepared this Technical Program, wishing wholeheartedly that they will enjoy it as much as possible. But, do not forget to make it compatible with some sightseeing around Reykjavik and its beautiful surroundings!

Vicente E. Boria

Technical Program Chair

Leifur Leifsson

Technical Program Co-Chair

Technical Program Committee

Vicente E. Boria	*University of Valencia, Spain* **– TPC chair**
Leifur Leifsson	*Iowa State University* – **TPC co-chair**
Peter Aaen	*University of Surrey, United Kingdom*
Fritz Arndt	*University of Bremen, Germany*
John Bandler	*McMaster University, Canada*
Adrian Bekasiewicz	*Gdansk University of Technology, Poland*
Rafael R. Boix	*University of Seville, Spain*
Maurizio Bozzi	*University of Pavia, Italy*
Thomas Brazil †	*University College Dublin, Ireland*
Qingsha S. Cheng	*Southern University of Science and Technology, China*
Valentin de la Rubia	*Universidad Politecnica de Madrid, Spain*
Dirk de Villiers	*Stellenbosch University, South Africa*
Tom Dhaene	*Ghent University, Belgium*
Miguel Ferrando-Bataller	*Universitat Politècnica de València, Spain*
Francisco Ferranti	*IMT Atlantique, France*
Anthony Ghiotto	*University of Bordeaux, France*
Franco Giannini	*University of Tor Vergata, Italy*
Marco Guglielmi	*University of Valencia, Spain*
Wolfgang Hoefer	*Institute of High Performance Computing, Singapore*
Wei Hong	*Southeast University of Nanjing, China*
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Pieter Jacobs	*University of Pretoria, South Africa*
Slawomir Koziel	*Reykjavik University, Iceland*
Piotr Kurgan	*Gdansk University of Technology, Poland*
Er-Ping Li	*Zhejiang University, China*
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Alejandro Javier Martinez-Ros	*University of Seville, Spain*
Francisco Medina	*University of Seville, Spain*
Francisco Mesa	*University of Seville, Spain*
Mauro Mongiardo	*University of Perugia, Italy*
Michel Nakhla	*Carleton University, Canada*
Adam Narbudowicz	*Dublin Institute of Technology, Ireland*
Natalia Nikolova	*McMaster University, Canada*
Stanislav Ogurtsov	*Reykjavik University, Iceland*

Luca Perregrini	*University of Pavia, Italy*
Cedric Quendo	*Lab-STICC - UBO Brest, France*
Eva Rajo-Iglesias	*University Carlos III of Madrid, Spain*
James Rautio	*Sonnet Software, Ltd., USA*
José Rayas-Sánchez	*ITESO, Mexico*
Raúl Rodríguez-Berral	*University of Seville, Spain*
Hendrik Rogier	*Ghent University, Belgium*
Jesús Rubio	*University of Extremadura, Spain*
Amelia Rubio-Bretones	*University of Granada, Spain*
Matthias Rudolph	*Brandenburg University of Technology, Germany*
Jorge Ruiz-Cruz	*Escuela Politecnica Superior, Spain*
Dominique Schreurs	*KU Leuven, Belgium*
Christian Schuster	*Hamburg University of Technology (TUHH), Germany*
Richard V. Snyder	*RS Microwave Company Inc., USA*
Pablo Soto	*Universidad Politécnica de Valencia, Spain*
Almudena Suarez	*University of Cantabria, Spain*
José M. Taboada	*University of Extremadura, Spain*
Yonatan Afework Tesfahunegn	*Reykjavik University, Iceland*
Cristiano Tomassoni	*University of Perugia, Italy*
Guido Valerio	*Sorbonne Universités UPMC, France*
Ke Wu	*University of Montreal, Canada*
Jong-Gwan Yook	*Yook Yonsei University, Korea*
Qi-Jun Zhang	*Carleton University, Canada*

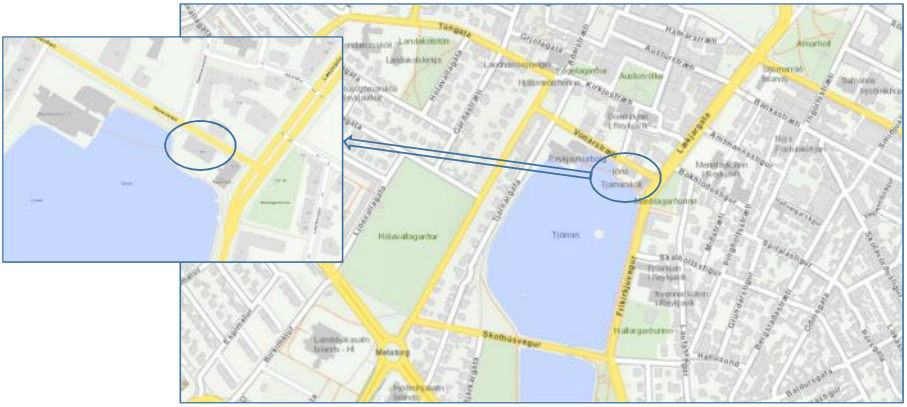
Gala Dinner

Iðnó, Vonarstræti 3, 101 Reykjavik

Thursday, August 9, 2018, 7:30pm-10:30pm

The Gala Dinner of NEMO2018 conference will take place on Thursday, August 9, 2018, starting at 7:30pm, in the restaurant Iðnó, located in the city center, close to the City Hall. Iðnó is an attractive, accessible and inspiring place for ideas and stories. The building combines in one place history, tradition and culture, dating back to the year 1897. Iðnó is a living monument of older and simpler times, all the while being a modern rendezvous for people of all classes and ages.

The winner of the Best Student Paper Award will be announced during the Gala Dinner, and the NEMO2019 conference will be presented. All conference attendees will receive an invitation ticket for the Gala Dinner. Additional tickets for guests will be available at the conference registration desk.



Opening Session (Room V101)

Wednesday, August 8, 8:30-9:30

Welcome from the Conference General Chair
Slawomir Koziel
Reykjavik University, Iceland

Welcome from the President of Reykjavik University
Ari Kristinn Jonsson
Reykjavik University, Iceland

Welcome from the Technical Program Chair
Vicente E. Boria
University of Valencia, Spain

Address from the MTT-S Representative
Maurizio Bozzi
University of Pavia, Italy

Keynote Speech 1 (Room V101)

Full-Wave EM-based Techniques for the Design of Microwave Circuits, Filters & Antennas

Peter Thoma

CST – Computer Simulation Technology GmbH
a Dassault Systèmes Company

Wednesday, August 8, 9:30-10:30

Abstract: The development of complex communication systems requires microwave components such as filters, antennas, and circuits to meet the specifications coming from a top-down system level design process. Recent advances in manufacturing technology such as flexible circuits as well as additive manufacturing among others provide more flexibility to the designers and allow the development of lighter and smaller components. However, these new possibilities often result in novel solutions for which traditional design strategies and methods cannot be applied anymore such that full wave EM techniques need to be used instead. An important aspect for practical applications in this context is the robustness of the designs with regard to manufacturing tolerances. The presentation will give an introduction to some of the new design methodologies and illustrates how full wave EM techniques can be applied in order to develop small, lightweight, and robust microwave components.

Peter Thoma received the Diploma and PhD degrees from the Technical University of Darmstadt in 1992 and 1997, respectively. During his PhD work he focused on various improvements for time domain simulation of electromagnetic fields by using the Finite Integration Technique. His major contributions include the developments of a stable sub-gridding scheme for FDTD as well as the PBA technique which has now become a standard method being used in commercial high frequency electromagnetic simulators. After finishing his PhD, he joined CST GmbH as a managing director and is since then in charge of managing CST's R&D activities.

Special Session WA2 (Room V101)

EM Modelling and Design of Microwave Filters and Multiplexers (I)

Wednesday, August 8, 10.50-12.10

Organizers:	Cristiano Tomassoni (University of Perugia, Italy) Vicente E. Boria (University Politécnica de Valencia, Spain) Ke-Li Wu (Chinese University of Hong Kong, China)
Chairs:	Cristiano Tomassoni (University of Perugia, Italy) Vicente E. Boria (University Politécnica de Valencia, Spain)

10.50-11.10	Compensation of Cross-Dependencies in Computer Aided Tuning of Microwave Filters by Simplified Space Mapping Approach *Daniel Miek and **Michael Höft***
11.10-11.30	Double Resonance Waveguide Cavity ***Cristiano Tomassoni**, Simone Bastioli, and Richard V. Snyder*
11.30-11.50	Continuously Tunable X-Band Filter Using a 3D Spiral Ribbon ***Aurelien Perigaud**, Nicolas Delhote, Olivier Tantot, Stéphane Bila, Serge Verdeyme, and Ludovic Carpentier*
11.50-12.10	X-band Waveguide Filter Modeling by UPML Radial Point Interpolation Meshless Method in Time domain ***Rostom Khalef**, Mohamed Benhabiles, Farouk Grine, Larbi Benkhaoua, Zeyneb Cheraiet, Mohamed lahdi Riabi, and Boubekeur Messili*

Special Session WB2 (Room V102)

Modelling, Design and Optimization of Antenna Systems

Wednesday, August 8, 10.50-12.30

Organizer:	Dirk de Villiers (Stellenbosch University, South Africa)
Chairs:	Dirk de Villiers (Stellenbosch University, South Africa) Slawomir Koziel (Reykjavik University, Iceland)

10.50-11.10	Low-Cost Frequency Variation Models of Quad-Ridge Flared Horn Reflector Feed Antennas ***Dirk de Villiers**, Fahmi Mokhupuki, and Brandt Klopper*
11.10-11.30	Systematic Study of Feed Line and Ground Plane Modifications for Design of Miniaturized Wideband Antennas ***Muhammad ul Haq**, Slawomir Koziel, and M. Arif Khan*
11.30-11.50	Fast Design Optimization of Wideband Antennas Using EM-Driven Adaptive Response Scaling ***Sigmar Unnsteinsson** and Slawomir Koziel*
11.50-12.10	Computational Electromagnetics in Service of Polarimetric Phased Array Radar Calibration - What Causes the Differential Phase bias? ***Djordje Mirkovic**, Tomislav Milosevic, Dusan Zrnic, and Hjalti Sigmarsson*
12.10-12.30	Surrogate-Assisted Desing of Low-Sidelobe Microstrip Linear Arrays with Corporate Feeds *Slawomir Koziel and **Stanislav Ogurtsov***

Keynote Speech 2 (Room V101)

From the Engineer's "Mysterious Feel" to "Cognition-driven Design": A Quarter Century of Space Mapping Technology

John W. Bandler

McMaster University

Wednesday, August 8, 13:30-14:30

Abstract: Engineering design optimization, in particular, electromagnetics-based computer-aided microwave circuit design has been successfully exploiting "space mapping" technology for twenty-five years. When unveiled in 1994, the concept and its astounding promise surprised the engineering community. Over the years this surprise evolved from an initial disbelief that such a simple mathematical technique could cover such a wide range of design optimization problems to the conviction that the idea had been in widespread use already. Both beliefs turn out to be correct. The underlying idea is simple and, indeed, those with "expert" knowledge, knowingly or unknowingly, harness the space mapping concept in activities ranging from everyday human experiences to expert tuning and design with electromagnetic accuracy of complex systems. Mathematicians tried to annex space mapping as an extension to "surrogate modeling," albeit physics-based, while design engineers saw space mapping as a programmable manifestation of the engineer's mysterious "feel" for a problem. It took some work, for example, persuading mathematician and collaborator Kaj Madsen to include space mapping in the title of our jointly proposed International Workshop on Surrogate Modelling and Space Mapping. Here, we address the backstory to space mapping: reactions to it by the scientific and engineering communities, some success stories, some failures; and its ongoing reinvention as "cognition-driven design" and a likely cornerstone of multiphysics-based modeling and design. Here, physically-based surrogates, space mapping technology, and the refinement of feature-based and cognition-driven approaches are essential. This talk complements the 2018 reprinting in *IEEE Microwave Magazine* of Bandler's 2013 *IEEE Canadian Review* article: "Have you ever wondered about the engineer's mysterious 'feel' for problem."

John Bandler, OC, is a Professor Emeritus in the Department of Electrical and Computer Engineering, McMaster University. He founded Optimization Systems Associates Inc. in 1983 and sold it to Hewlett-Packard in 1997. Bandler studied in England at Imperial College of Science and Technology and received his B.Sc.(Eng.), Ph.D. and D.Sc.(Eng.) degrees from the University of London. He is a Life Fellow of the IEEE and Fellow of several societies, including the Royal Society of Canada and the Canadian Academy of Engineering. He has published more than 500 technical papers and contributions to books, won numerous professional awards, and pioneered space mapping technology in 1993. He has been honored

by a Queen Elizabeth II Diamond Jubilee Medal, by McMaster University's Faculty of Engineering Research Achievement Award, by IEEE Canada's A.G.L. McNaughton Gold Medal, and by the IEEE Microwave Theory and Techniques Society through their Microwave Application Award and by their Microwave Career Award—both awards bestowed on a Canadian for the first time. In 2016, Bandler was appointed Officer of the Order of Canada "For his scientific contributions that have helped to position Canada at the forefront of microwave engineering." He mentors individuals for public presentations, and co-organized the first ever 3MT® competition at the IEEE International Microwave Symposium in 2017, an event to be continued in 2018 and 2019. Active in artistic endeavors, Bandler has authored fiction and non-fiction, including a screenplay and nine stage plays. Four of his plays have been performed, one he directed himself. Videos of some of his work, and talks on communication, persuasion, creativity and related topics can be found on the internet.

Special Session WA3 (Room V101)

Space Mapping Techniques for Modelling and Design based on Expensive High Fidelity Data

Wednesday, August 8, 14.30-16.10

Organizers:	José E. Rayas (ITESO, Mexico) Qingsha Cheng (SUST, Shenzhen, China)
Chairs:	José E. Rayas (ITESO, Mexico) Qingsha Cheng (SUST Shenzen, China)

14.30-14.50	The Sequential Parameter Extraction for EM-based Design of Dielectric-Resonator Bandpass Filter *Xiaolin Fan, **Song Li**, Qingsha Cheng, and Paul Laforge*
14.50-15.10	Multi-Objective Design of Compact Microwave Components with Data-Driven Surrogates and Pareto Front Decomposition ***Adrian Bekasiewicz**, Slawomir Koziel, and John Bandler*
15.10-15.30	An Efficient EM-based Ultra-Wideband Bandpass Filter Design ***Xiaolin Fan** and Song Li*
15.30-15.50	Cognition-Driven Formulation of Space Mapping for Reducing Gain Variation of Antennas *Chao Zhang, Jing Jin, Zhihao Zhao, and **Qijun Zhang***
15.50-16.10	High-Speed Links Receiver Optimization in Post-Silicon Validation Exploiting Broyden-based Input Space Mapping *Francisco E. Rangel-Patino, **Jose E. Rayas-Sanchez**, Andres Viveros-Wacher, Edgar A. Vega-Ochoa, and Nagib Hakim*

Session WB3 (Room V102)

Computer-Aided Design of Antennas & OMTs

Wednesday, August 8, 14.30-16.10

Chairs: Ying Wang (University of Ontario, Canada)
Jorge Ruiz-Cruz (University Autónoma de Madrid, Spain)

14.30-14.50	Design and EM-driven Optimization of A Compact Low Profile Circularly Polarized Wide-slot CPW-fed Antenna For Broadband Applications ***Ubaid Ullah*** *and Slawomir Koziel*
14.50-15.10	Application of Neural Networks in the Modelling of Dielectric Resonator Antenna Arrays *Jonathan Anderson,* ***Ying Wang****, Wael Abdel-Wahab, and Ming Yu*
15.10-15.30	Expedited Frequency Scaling of Circular Polarization Antennas By Inverse and Forward Surrogates *Slawomir Koziel and* ***Adrian Bekasiewicz***
15.30-15.50	Near-Field Microwave Sensor Composed of 3D Printed Antennas and Lenses *Ivor L. Morrow and* ***Sebastian G. Wirth***
15.50-16.10	CAD of Asymmetric Ortho-Mode Transducers for Single- and Dual-Band Linear Polarization with Simple Building-Blocks ***Jorge A Ruiz-Cruz****, Raul Haro-Baez, Jose Ramon Montejo-Garai, and Jesus Maria Rebollar*

Special Session WA4 (Room V101)

Statistical & Stochastic Analysis and Robust Design of High-Frequency Structures

Wednesday, August 8, 16.30-18.10

Organizers:	Q.J. Zhang (Carleton University, Canada) Slawomir Koziel (Reykjavik University, Iceland)
Chairs:	Q.J. Zhang (Carleton University, Canada) Slawomir Koziel (Reykjavik University, Iceland)

16.30-16.50	Recent Advances in EM-Based Yield Estimation *Jianan Zhang, Chao Zhang, Feng Feng, Wei Zhang, and* ***Qijun Zhang***
16.50-17.10	Surrogate-Assisted Tolerance Analysis of Microstrip Linear Arrays with Corporate Feeds *Slawomir Koziel and* ***Stanislav Ogurtsov***
17.10-17.30	Fast Uncertainty Propagation of Ultrasonic Testing Simulations for MAPOD and Sensitivity Analysis *Xiaosong Du,* ***Leifur Leifsson****, Praveen Gurrala, Jiming Song, and Slawomir Koziel*
17.30-17.50	Multifidelity Modeling of Ultrasonic Testing Simulations with Co-Kriging ***Leifur Leifsson****, Xiaosong Du, and Slawomir Koziel*
17.50-18.10	A Compressive Sensing Application on Microwave Diffraction Tomography for the Microwave Imaging of a Stroke Affected Human Brain ***Ismail Dilman****, Egemen Bilgin, Sema Cosgun, Mehmet Çayören, and Ibrahim Akduman*

Special Session WB4 (Room V102)

EM Modelling and Design of Microwave Filters and Multiplexers (II)

Wednesday, August 8, 16.30-17.50

Organizers:	Cristiano Tomassoni (University of Perugia, Italy) Vicente E. Boria (University Politécnica de Valencia, Spain) Ke-Li Wu (Chinese University of Hong Kong, China)
Chairs:	Michael Höft (Kiel University, Germany) Petronilo Martín-Iglesias (ESTEC-ESA, The Netherlands)

16.30-16.50	Efficient Design Procedure of OMUX Satellite Channel Filters using Full-Wave Numerical Methods *Javier Ossorio, Santiago Cogollos,* ***Vicente Boria****, and Marco Guglielmi*
16.50-17.10	Quasi-Analytical Design of Commensurate-Line Waveguide Band-Pass Filters *Fernando Teberio,* ***Petronilo Martin-Iglesias****, Ivan Arregui, Jon Percaz, Txema Lopetegi, Miguel Laso, and Israel Arnedo*
17.10-17.30	Complex Eigenmodes for Modelling of Dielectric Dual-Mode Resonators ***Michael Höft*** *and Daniel Miek*
17.30-17.50	Recent Advances in Parametric Modeling Using Pole-Residue-Based Neuro-Transfer Functions *Feng Feng, Chao Zhang, Weicong Na, Jianan Zhang, Wei Zhang, Zhihao Zhao, Jing Jin, and* ***Qijun Zhang***

Keynote Speech 3 (Room V101)

Microwave Near-Field Imaging Of Human Tissue: Hopes, Challenges, Outlook

Natalia Nikolova

McMaster University, Canada

Thursday, August 9, 8.30-9.30

Abstract: Some 40 years ago, Larsen and Jacobi experimented with microwaves in the imaging of canine kidney. Their pioneering work triggered high hopes for a new diagnostic and imaging modality in medicine. Further research identified the main challenges and, to this day, continues unabated toward practical clinical solutions in the battle against breast and lung cancer, brain strokes and bone diseases. We will talk about these challenges and how they are being addressed with a focus on the role of electromagnetic modeling and optimization in real-time image reconstruction with microwave data.

Natalia K. Nikolova (IEEE S'93–M'97–SM'05–F'11) received the Dipl. Eng. (Radioelectronics) degree from the Technical University of Varna, Bulgaria, in 1989, and the Ph.D. degree from the University of Electro-Communications, Tokyo, Japan, in 1997. From 1998 to 1999, she held a Postdoctoral Fellowship of the Natural Sciences and Engineering Research Council of Canada (NSERC) at two Canadian universities: Dalhousie University in Halifax and McMaster University in Hamilton. In 1999, she joined the Department of Electrical and Computer Engineering at McMaster University, where she is currently a Professor. Her research interests include inverse scattering, microwave imaging, as well as computer-aided analysis and design of high-frequency structures and antennas. Prof. Nikolova has authored more than 250 refereed manuscripts, 5 book chapters, and the book "Introduction to Microwave Imaging" published by Cambridge University Press in July 2017. She has delivered 37 invited lectures around the world on the subjects of microwave imaging and computer-aided electromagnetic analysis and design. Prof. Nikolova is a Canada Research Chair in High-frequency Electromagnetics. She is a Fellow of the IEEE and a Fellow of the Canadian Academy of Engineering (CAE). She served as an IEEE Distinguished Microwave Lecturer from 2010 to 2013.

Session TA2 (Room V101)

Integral Equation Techniques

Thursday, August 9, 9.30-11.10

Chairs: Francisco Mesa (University de Sevilla, Spain)
Luca Perregrini (University of Pavia, Italy)

9.30-9.50	Generalized BI-RME Method applied to the Analysis of Dielectric-Loaded Waveguide Components *Simone Battistutta, Maurizio Bozzi, Marco Bressan, and* ***Luca Perregrini***
9.50-10.10	Dispersion Characteristics of Symmetrical/Asymmetrical Coupled Microstrip Type Structures with Stratified Anisotropic Media *Abdelhamid Khodja,* ***Mustapha Yagoub****, and Rachida Touhami*
10.10-10.30	Circuit Models for Printed Multiresonant FSSs *Raúl Rodríguez-Berral,* ***Francisco Mesa****, and Francisco Medina*
10.30-10.50	Rigorous Multimode Equivalent Network Representation of Multilayer Planar Circuits ***Celia Gomez Molina****, Fernando D Quesada Pereira, Alejandro Alvarez-Melcon, Stephan Marini, Miguel Angel Sanchez Soriano, Vicente Boria, and Marco Guglielmi*
10.50-11.10	PIE-MLFMA Implementation for Solving Complex Subwavelength Electromagnetic Problems *Ugur Meric Gur, Isa Cetin, Bariscan Karaosmanoglu, and* ***Ozgur Ergul***

Session TB2 (Room V102)

Modeling of Components & Devices

Thursday, August 9, 9.30-11.10

Chairs: Robert H. Caverly (Villanova University, Canada)
Ege Engin (San Diego State University, USA)

9.30-9.50	Differential-Line Characterization Using Mixed-Port Scattering Parameters ***Ege Engin**, Ivan Ndip, Klaus-Dieter Lang, and Jerry Aguirre*
9.50-10.10	Analytical Modeling of Power Pin Impedance in Parallel Power & Ground Planes *Ihsan Erdin and **Ram Achar***
10.10-10.30	Numerical Modeling of Surface Effects in RF Switching PIN Diodes ***Robert Caverly***
10.30-10.50	Modeling of Trenched Coplanar Waveguide for Redistribution Layer of RF MEMS Switch Applications ***Yeonsu Jang**, Chong-Ho Hong, and Kukjin Chun*
10.50-11.10	System Analysis of High Speed Designs with Strong Nonlinearity *Jin Yan, Jun Liao, **Jianfang Zhu**, Alaeddin Aydiner, Adam Norman, and Yunhui Chu*

Session IF (Sun)

Poster Session

Thursday, August 9, 11.30-12.30

Chairs: Adrian Bekasiewicz (Gdansk Univ. of Technology, Poland)
Leifur Leifsson (Iowa State University, USA)

P1	Absorptive Filter Prototype and Distributed-Element Absorptive Bandpass Filter ***Seong-Wook Jeong**, Tae-Hak Lee, and Juseop Lee*
P2	E-Plane Metal-Insert Filters with Pseudo-Elliptic Response ***Marco Politi**, Lorenzo Codecasa, and Gian Guido Gentili*
P3	Novel Multi-mode Wideband Filters based on Cone Half-mode Substrate Integrated Waveguide *Halima Ammari, Mohamed lahdi Riabi, **Farouk Grine**, and Rawdha Thabet*
P4	RFIC IP Redesign and Reuse Through Surrogate Based Machine Learning Method ***Yi Wang** and Paul Franzon*
P5	Low-Cost Simulation-Driven Design of Broadband Rectifiers for Ambient RF Energy Harvesting ***Adrian Bekasiewicz**, Tologon Karataev, and Slawomir Koziel*
P6	Augmented Interpretation Model of a Moving Media for the Electrodynamic Effects Simulation ***Kirill Zeyde***
P7	The Effect of Pitch Circle Diameter of Electrodes on Current Distributions in Submerged Arc Furnace ***Yonatan Afework Tesfahunegn**, Thordur Magnusson, Merete Tangstad, and Gudrun Arnbjorg Saevarsdottir*
P8	Microwave Phase Contrast Imaging of the Subsurface using Variation in Soil Moisture Levels ***Sebastian G. Wirth**, Ivor L. Morrow, and Daniel Andre*

P9	Modeling and Optimization of 144 kVA Transformer for EV Fast Charger Application ***Kristen Booth**, Srdjan Srdic, and Srdjan Lukic*
P10	Estimating the Relation Between Parotid Gland Tumor Development and Exposure RF Radiation ***Motti Haridim**, Ohad Hilly, Lirit Levy, Roi Lesnik, and Benjamin Milgrom*

Special Session TA3 (Room V101)

Advances on Finite Element EM Analysis Methods and Computational Electromagnetics

Thursday, August 9, 13.30-15.10

Organizers:	Valentín de la Rubia (Univ. Politécnica de Madrid, Spain) Dan Jiao (Purdue University, Indiana, USA)
Chairs:	Valentín de la Rubia (Univ. Politécnica de Madrid, Spain) Dan Jiao (Purdue University, Indiana, USA)

13.30-13.50	Full-wave Coupling Matrix Description in Microwave Filters via Reduced-Basis Approximations in Electromagnetics ***Valentin de la Rubia*** *and David Young*
13.50-14.10	Multi-physics Modeling & Characterization of Aerosol Jet Printed Transmission Lines *Sridhar Sivapurapu, Chirag Mehta, Rui Chen, Xiaotong Jia, Yi Zhou, Mohamed Bellaredj, Paul Kohl, Tsung-Ching Jim Huang, Suresh Sitaraman, and* ***Madhavan Swaminathan***
14.10-14.30	Optimization of the Finite Element Mesh by the a priori Parameter of Smallness ***Kirill Zeyde***
14.30-14.50	A Spectral Element Solution to Generate Well-conditioned System Matrices at Any Desired Frequency ***Yuan-Guo Zhou****, Jiamin Wang, and Yingshi Chen*
14.50-15.10	Direct Solution of General H^2-Matrix with Controlled Accuracy and Change of Cluster Bases for Large-Scale Electromagnetic Analysis *Miaomiao Ma and* ***Dan Jiao***

Special Session TB3 (Room V102)

Behavioral Modeling of Complex Dynamical Systems: How to Master Complex Systems in your Daily Engineering Tasks

Thursday, August 9, 13.30-15.10

Organizers:	Francesco Ferranti (IMT Atlantique, Brest, France) Michel Nakhla (Carleton University, Canada)
Chairs:	Francesco Ferranti (IMT Atlantique, Brest, France) Michel Nakhla (Carleton University, Canada)

13.30-13.50	Interpolation of Reduced-Order Models Based on Modal Analysis *Yao Yue, **Lihong Feng**, and Peter Benner*
13.50-14.10	An adaptive modeling method for the calibration of passive tuners ***Francesco Ferranti**, Maral Zyari, and Yves Rolain*
14.10-14.30	Parametric Simulation of PEEC Circuits in the Frequency-Domain *Luigi Lombardi, Ye Tao, Michel Nakhla, **Francesco Ferranti**, Giulio Antonini, and Behzad Nouri*
14.30-14.50	Modeling Thermal Coupling in Bipolar Power Amplifiers toward Dynamic Electrothermal Simulation *Vincenzo d'Alessandro, **Antonio Pio Catalano**, Lorenzo Codecasa, Brian Moser, and Peter Zampardi*
14.50-15.10	Model order reduction for dynamic thermal models of LED packages ***Wil Schilders** and Sangye Lungten*

Special Session TA4 (Room V101)

Modeling and Design of Nanomaterials, Nanopackages, NanoDevices and Graphene

Thursday, August 9, 15.30-17.30

Organizers:	Dominique Baillargeat (University of Limoges, France) Luca Pierantoni (University Polit. della Marche, Italy)
Chairs:	Dominique Baillargeat (University of Limoges, France) Luca Pierantoni (University Polit. della Marche, Italy)

15.30-15.50	Theoretical study of CNT based waveguide *Dominique Baillargeat, BK Tay, Stéphane Bila, Philippe Coquet,* ***Philippe Roux-Levy****, Matthieu Cometto, and Kamel Frigui*
15.50-16.10	Strain Optimization in Silicon P-Type Double-Gate MOSFET at 7nm Channel Length *Shuo Zhang, Jun Huang, and* ***Wenyan Yin***
16.10-16.30	Modelling Nano- and Microscale Vacuum Electronics A molecular dynamics approach *Kristinn Torfason, Andrei Manolescu, and* ***Agust Valfells***
16.30-16.50	Electromagnetic Modeling in Near-Field Scanning Microwave Microscopy ***Petr Polovodov****, Charlène Brillard, Olaf C Haenssler, Christophe Boyaval, Dominique Deresmes, Sophie Eliet, Fei Wang, Nicolas Clement, Didier Théron, Gilles Dambrine, and Kamel Haddadi*
16.50-17.10	Large-Signal Metal-Insulator-Graphene Diode Model on a Flexible Substrate for Microwave Application ***Chun-Yu Fan****, Muh-Dey Wei, Mohamed Saeed Elsayed, Ahmed Ghareeb, Renato Negra, Zhenxing Wang, Mehrdad Shaygan, and Daniel Neumaier*
17.10-17.30	Ab-initio simulation of single carbon-cluster electron device *Luca Pierantoni, Matteo Stocchi, and* ***Davide Mencarelli***

Special Session TB4 (Room V102)

Machine Learning and Surrogate Modeling Applications in Radio Frequency and Electromagnetic Engineering

Thursday, August 9, 15.30-17.30

Organizers:	Ivo Couckuyt (Ghent Univ., Belgium) Domenico Spina (Ghent Univ., Belgium) Tom Dhaene (Ghent Univ., Belgium)
Chairs:	Ivo Couckuyt (Ghent Univ., Belgium) Domenico Spina (Ghent Univ., Belgium)

15.30-15.50	A Bayesian Framework for Optimizing Interconnects in High-Speed Channels *Hakki Torun, Mourad Larbi, and* ***Madhavan Swaminathan***
15.50-16.10	Assembly-Line-Compatible Electromagnetic Characterization of Antenna Substrates for Wearable Applications using Polynomial Chaos ***Thomas Deckmyn****, Marco Rossi, Sam Agneessens, Hendrik Rogier, and Dries Vande Ginste*
16.10-16.30	Data-Efficient Bayesian Optimization with Constraints for Power Amplifier Design ***Nicolas Knudde****, Ivo Couckuyt, Domenico Spina, Konstanty Lukasik, Pawel Barmuta, Dominique Schreurs, and Tom Dhaene*
16.30-16.50	Accurate Design-Oriented Modeling of Compact Microwave Couplers in Constrained Domains ***Slawomir Koziel****, Ari Sigurdsson, and Freysteinn Vidarsson*
16.50-17.10	Reliable EM-Driven Design Optimization of Miniaturized Rat-Race Couplers *Slawomir Koziel and* ***Piotr Kurgan***
17.10-17.30	Analog Fault Identification in RF Circuits using Artificial Neural Networks and Constrained Parameter Extraction ***Andres Viveros-Wacher*** *and Jose E. Rayas-Sanchez*

Keynote Speech 4 (Room V101)

Some Recent Developments in Computational Electromagnetics using The Finite Difference Time Domain Method

Atef Z. Elsherbeni

Colorado School of Mines

Friday, August 10, 9.00-10.00

Abstract: This presentation will focus on recent developments in the finite difference time domain (FDTD) method for electromagnetics and antenna applications. First a brief introduction to the method, its capabilities, and the type of lumped circuit elements, linear and non-linear, which can be integrated into an electromagnetic simulation will be presented. Other techniques to enhance the applicability's of the FDTD will be introduced. Among these are:

- The integration and reduction of the computational time for simulations containing lossy anisotropic media for antennas and scattering problems.
- The modeling of cylindrical-sectoral structures with the BOR-FDTD Method.
- The use of impedance boundary conditions for terminating the computational domain.
- The integration of thermal analysis with the electromagnetic analysis in one simulation.

Some of the recent development of the speed up of the FDTD method using graphical processing gaming cards (GPUs) along with the use of different programming languages such as Fortnan, Matlab, CUDA, and OpenCL will be addressed.

Atef Z. Elsherbeni received his Ph.D. degree in Electrical Engineering from Manitoba University, Winnipeg, Manitoba, Canada, in 1987. Dr. Elsherbeni was with the University of Mississippi from 1987 to 2013. He was a Finland Distinguished professor from 2009 to 2011. He joined the Electrical Engineering and Computer Science Department at Colorado School of Mines in August 2013 as the Dobelman Distinguished Chair Professor. Currently he is the Head of the Electrical Engineering Department. His research interest includes the scattering and diffraction of EM waves, finite-difference time-domain analysis of antennas and microwave devices, field visualization and software development for EM education, interactions of electromagnetic waves with the human body, RFID and sensor integrated FRID systems, reflector and printed antennas and antenna arrays, and measurement of antenna characteristics and material properties. His academic achievements includes:13 books, 29 book chapters, 176 journal publications, 15 developed software packages, 56 (35 MS and 21 PhD) graduate students advised, 40 invited presentations, 225 proceedings publications, 175 conference abstracts, 74 technical reports, 35 short courses offered, 43 invited talks. Dr. Elsherbeni is a Fellow member of IEEE and ACES. He is the Editor-in-Chief for ACES Journal. He was the general Chair for the 2014 APS-URSI Symposium and was the president of ACES Society from 2013 to 2015.

Session FA2 (Room V101)

Time-Domain Numerical Techniques

Friday, August 10, 10.20-12.00

Chairs: Hendrik Kleene (TU Dortmund Univ., Germany)
Balasubramaniam Shanker (Michigan State Uinv., USA)

10.20-10.40	Implementation of HEMP Waveforms for Time-Domain Modeling ***Derek Mallinson*** *and Ivor L. Morrow*
10.40-11.00	Acceleration techniques for semiclassical Maxwell-Bloch systems *Connor Glosser, Carlo Piermarocchi, and* ***B. Shanker***
11.00-11.20	A Conformal Thin Boundary Model for FDTD ***Samuel Bourke****, John F Dawson, Martin Robinson, and Stuart Porter*
11.20-11.40	Concept of a Complex Envelope Faber Polynomial Approach for the Solution of Maxwell's Equations ***Hendrik Kleene*** *and Dirk Schulz*
11.40-12.00	Analysis of Spoof Surface Plasmon Polaritons in a Metal Disc-Type Splitter Using the Cylindrical HIE-FDTD Method ***Jun Shibayama****, Masato Ito, Junji Yamauchi, and Hisamatsu Nakano*

Special Session FB2 (Room V102)

EM Modelling and Design of SIW Components and Transmission Lines

Friday, August 10, 10.20-12.00

Organizers:	Jorge D. Martínez (Univ. Politécnica de Valencia, Spain) Anthony Ghiotto (Univ. of Bordeaux, France) Maurizio Bozzi (Univ. of Pavia, Italy)
Chairs:	Jorge D. Martínez (Univ. Politécnica de Valencia, Spain) Anthony Ghiotto (Univ. of Bordeaux, France)

10.20-10.40	Miniaturization and Quality-Factor in Substrate Integrated Waveguide Cavities *Nicolò Delmonte*, ***Cristiano Tomassoni***, *Maurizio Bozzi, and Luca Perregrini*
10.40-11.00	Miniaturized Filters Based on SIW Quasi-Lumped Elements ***Jorge Martinez***, *Hirahi Galindo, Stefano Sirci, and Vicente Boria*
11.00-11.20	Air-Filled SIW Filters for K- to E-Band Substrate Integrated Systems ***Tifenn Martin***, *Anthony Ghiotto, Frédéric Lotz, and Tan Phu Vuong*
11.20-11.40	Substrate Integrated Waveguide with Tapered Electromagnetic Bandgap Structures for Bandpass Filter Design ***Farouk Grine***, *Mohamed Taoufik Benhabiles, Rostom Khalef, Tarek Djerafi, and Mohamed lahdi Riabi*
11.40-12.00	Design of Frequency Tunable LTCC Coaxial SIW Filters with Constant Passband Shape *Stefano Sirci,* ***Jorge Martinez****, Vicente Boria, Jordi Gil, and Laurent Marchand*

Session FA3 (Room V101)

Frequency-Domain Methods

Friday, August 10, 13.00-14.40

Chairs: Jens Bornemann (Univ. of Victoria, Canada)
Maurizio Bozzi (Univ. of Pavia, Italy)

13.00-13.20	Substrate Integrated Waveguide Right-Angled Power Divider Design Using Mode-Matching Techniques ***Sara Salem Hesari*** *and Jens Bornemann*
13.20-13.40	Analysis of Waveguide Extracted Poles ***Luciano Accatino****, Giorgio Bertin, and Roberto Vallauri*
13.40-14.00	Vector formulation of the meshless variational method for inhomogeneous rectangular waveguides *Vincenzo Lombardi, Maurizio Bozzi, and* ***Luca Perregrini***
14.00-14.20	The Effect of Frequency on Current Distributions Inside Submerged Arc Furnace ***Yonatan Afework Tesfahunegn****, Thordur Magnusson, Merete Tangstad, and Gudrun Arnbjorg Saevarsdottir*
14.20-14.40	Broadband modeling of passive components via augmented equivalent circuit models ***Sanda Lefteriu*** *and Stefano Grivet*

Special Session FB3 (Room V102)

Multi-Physiscs EM-based Techniques for RF High-Power Discharge Effects

Friday, August 10, 13.00-14.40

Organizers:	Carlos P. Vicente (AURORASAT, Dassault Systems, Spain) Monika Balk (CST, Dassault Systems, Germany) Sergio Anza (AURORASAT, Dassault Systems, Spain)
Chairs:	Carlos P. Vicente (AURORASAT, Dassault Systems, Spain) Monika Balk (CST, Dassault Systems, Germany)

13.00-13.20	Study on Multipactor Breakdown in Coaxial to Microstrip Transitions *Miguel Angel Sanchez Soriano, **Stephan Marini**, José Joaquín Vague, Celia Gomez Molina, Fernando D Quesada Pereira, Alejandro Alvarez-Melcon, Vicente Boria, and Marco Guglielmi*
13.20-13.40	Influence of work function on the multipactor threshold ***Adrien Plaçais**, Edén Sorolla, Mohamed Belhaj, Julien Hillairet, and Jérome Puech*
13.40-14.00	Effects of Backscattered Electrons on Multipactor Simulations with Parallel Magnetic Fields ***Matthew Feldman**, Aimee Hubble, Rostislav Spektor, and Preston Partridge*
14.00-14.20	Multipactor Characterization of Ferrite Materials for Space Applications *José Joaquín Vague, **Vicente Boria**, Marco Guglielmi, and Juan Carlos Melgarejo*
14.20-14.40	Analysis of the Multipactor Effect With Linear Frequency Modulated Signals ***Petronilo Martin-Iglesias** and Fernando Teberio*

Closing Session (Room V101)

Friday, August 10, 14.40-15.00

History of Reykjavik

How did the world‘s most northernmost capital city grew from a farmstead to a cultural centre which is a home to two-thirds of Iceland‘s population? Read on and discover all you should know about the history of Reykjavik.

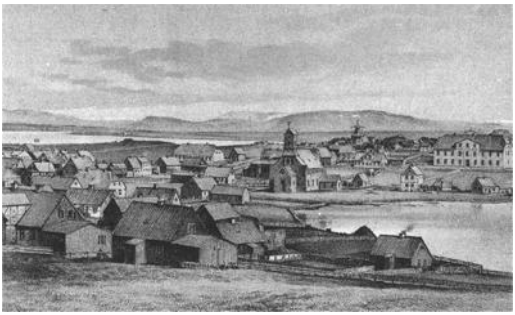
The first permanent settlement in Iceland – described in Landnámabók (the Book of Settlement) – was established at Reykjavík around AD 870 in the vicinity of the hot springs, possibly to help keep the inhabitants warm in the winter. Steam from hot springs in the region is said to have inspired Reykjavík’s name, which loosely translates to Smoke Cove.

Eiríksstaðir – reconstruction of a Viking-style settlement

In 1752, the King of Denmark, Frederik V, donated the estate of Reykjavík to the Innréttingar Corporation. In the 1750s, several houses were built to house the wool industry, which was Reykjavík‘s most important employer for a few decades. Other industries, such as fisheries, sulphur mining, agriculture, and shipbuilding were also undertaken. The year 1786, when the Danish Crown granted trading license to Reykjavík, is regarded as the founding date of the city. Although trading rights were initially limited to subjects of the Danish Crown, in 1880 they were expanded to all nationalities increasing the influence of Icelandic merchants in Europe.

Þingvellir – national park and place of the first general assembly (930 n.e.)

The 19th century gave birth to freedom movements in Iceland. Advocates of an independent country realized that a strong Reykjavík was fundamental to attain that objective. In 1874, Iceland was given a constitution. Then, in 1904, a Home Rule which moved most of the executive power from Denmark to Iceland was granted by establishing the office of Minister for Iceland in Reykjavik. The biggest step towards an independency was taken on December, 1, 1918 when Iceland became a sovereign country under the Crown of Denmark, the Kingdom of Iceland.



Reykjavik in the 19th century

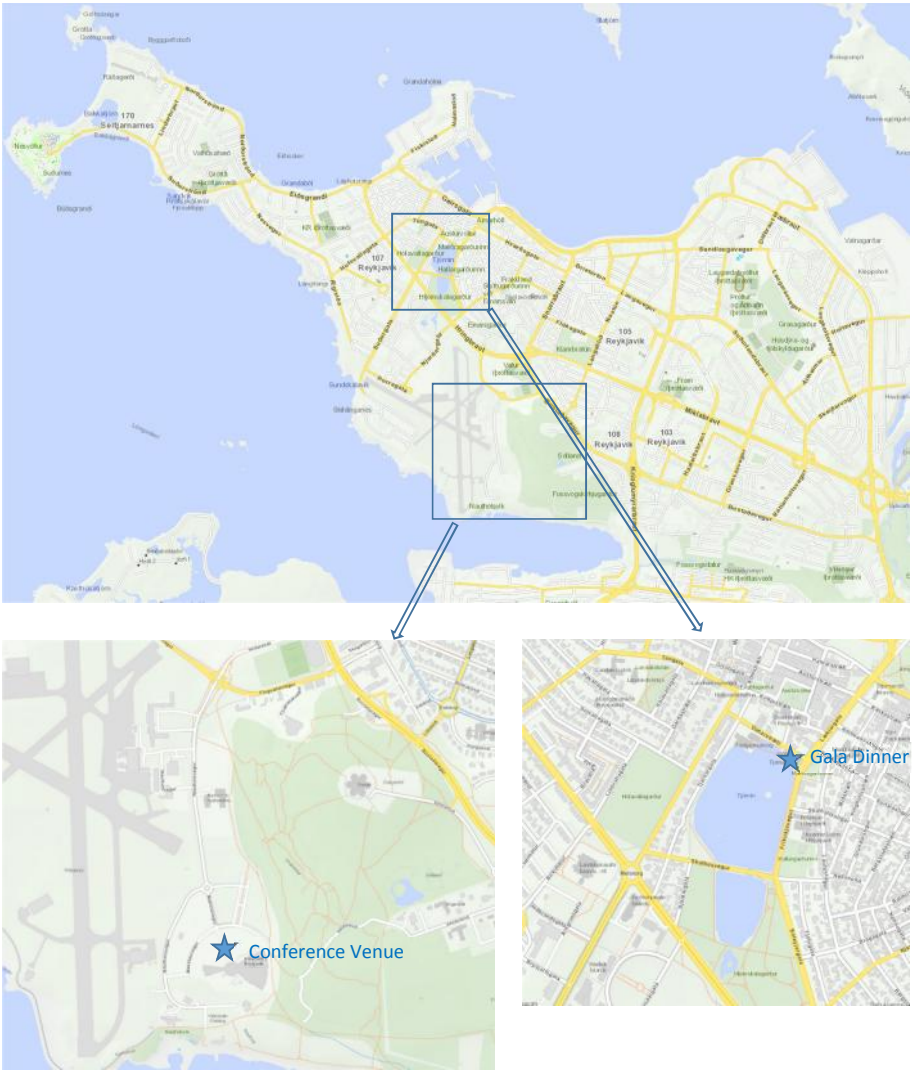
On May, 10, 1940, following the German occupation of Denmark and Norway on 9 April 1940, four British warships approached Reykjavík. In a few hours, the allied occupation of Reykjavík was complete without any armed resistance of citizens. The Icelandic government had received many requests from the British government to consent to the occupation, but it always declined on the basis of the Neutrality Policy. For the remaining years of World War II, British and later American soldiers occupied camps in Reykjavík, and the number of foreign soldiers in Reykjavík became about the same as the local population of the city.

The parliament building in Reykjavik

The economic effects of the occupation were positive for Reykjavík. The British built Reykjavík Airport, which is still in service today. The Americans, meanwhile, built Keflavík Airport, which became Iceland‘s primary international airport. In 1944, the Republic of Iceland was founded and a president, elected by the people, replaced the King. After the war, the growth of Reykjavík accelerated. An exodus from the rural countryside began, largely because improved technology in agriculture reduced the need for manpower, and because of a population boom resulting from better living conditions in the country. A once primitive village, Reykjavík, rapidly transformed into a modern city.

Harpa Concert Hall

Map of Reykjavik

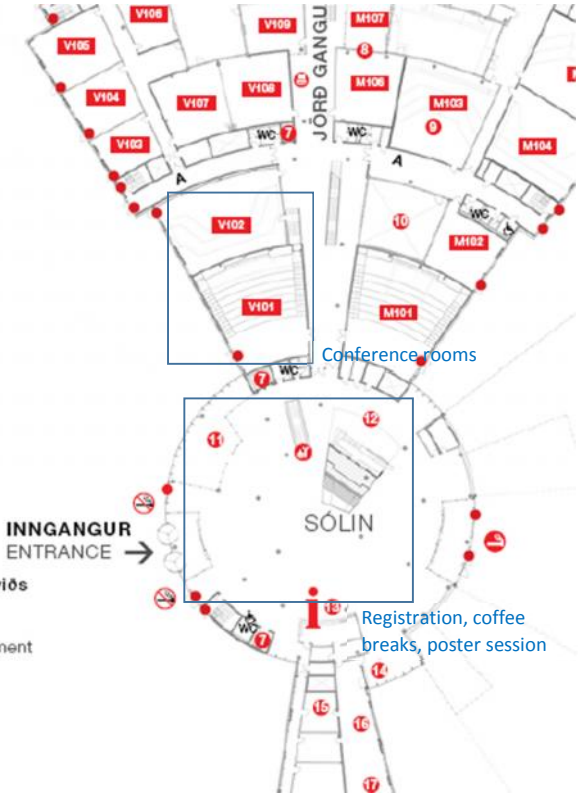


Conference Venue

The venue of NEMO2018 is in Reykjavik University. The University building is set near downtown Reykjavik, in a beautiful area right next to Iceland´s only geothermal beach. The newly built campus offers first-rate modern facilities. The conference Rooms V101 and V102 are on the ground floor of the building. Coffee breaks and exhibition will be hosted in the Sun, the main hall of the University.

Floorplan

1 **Byggingartæknistofa**
Civil Engineering Lab
2 **Heilbrigðisverkfræðistofa**
Biomedical Engineering Lab
3 **Efnafræðistofa**
Chemistry Lab
4 **Orkutæknistofa**
Energy Lab
5 **Vélsmiðja**
Machine Shop
6 **Málið | Matstofa**
Cafeteria
7 **Lyfta**
Elevator
8 **Tölvustofur**
Computer Labs
9 **Dómsalur M103**
Court Room M103
10 **Djúpið**
Abyss
11 **Bóksala stúdenta**
Book Store
12 **Te & Kaffi**
Coffee Shop
13 **Aðalmóttaka Sólin**
Information Sun
14 **Afgreiðsla upplýsingatæknisviðs**
IT department
15 **Fasteigna- og tæknisvið**
Facilities and tecnical management
16 **Viðburðaþjónusta**
Event services
17 **Upplýsingatæknisvið**
IT department
18 **Bókasafn**
Library



Conference Sponsors

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NEMO2018 Session Grid

Wednesday, August 8

8:30 – 9:30	Opening Session	
9:30 – 10:30	**Keynote Speech 1** Peter Thoma	
10:30 – 10:50	Coffee Break	
10:50 – 12:30	**WA2** EM Modelling and Design of Microwave Filters and Multiplexers (I)	**WB2** Modelling, Design and Optimization of Antenna Systems
12:30 – 13:30	Lunch	
13:30 – 14:30	**Keynote Speech 2** John W. Bandler	
14:30 – 16:10	**WA3** Space Mapping Techniques for Modelling and Design based on Expensive High Fidelity Data	**WB3** Computer-Aided Design of Antennas & OMTs
16:10 – 16:30	Coffee Break	
16:30 – 17:50	**WA4** Statistical & Stochastic Analysis and Robust Design of High-Frequency Structures	**WB4** EM Modelling and Design of Microwave Filters and Multiplexers (II)

Thursday, August 9

8:30 – 9:30	**Keynote Speech 3** Natalia Nikolova	
9:30 – 11:10	**TA2** Integral Equation Techniques	**TB2** Modeling of Components & Devices
11:10 – 11:30	Coffee Break	
11:30 – 12:30	**IF** Poster Session	
12:30 – 13:30	Lunch	
13:30 – 15:10	**TA3** Advances on Finite Element EM Analysis Methods and Comp. Electromagnetics	**TB3** Behavioral Modeling of Complex Dynamical Systems: How to Master Complex Systems in your Daily Engineering Tasks
15:10 – 15:30	Coffee Break	
15:30 – 17:30	**TA4** Modeling and Design of Nanomaterials, Nanopackages, Nanodevices and Graphene	**TB4** Machine Learning and Surrogate Modeling Applications in Radio Frequency and Electromagnetic Engineering

Friday, August 10

9:00 – 10:00	**Keynote Speech 4** Atef Z. Elsherbeni	
10:00 – 10:20	Coffee Break	
10:20 – 12:00	**FA2** Time-Domain Numerical Techniques	**FB2** EM modelling and Design of SIW Components and Transmission Lines
12:00 – 13:00	Lunch	
13:00 – 14:40	**FA3** Frequency-Domain Techniques	**FB3** Multi-Physics EM-based Techniques for RF High-Power Discharge Effects
14:40 – 15:00	Closing Session	