Bilateral Workshop

Science of the Polar Regions - Neuroscience - Scientific Challenges of New Energy Technologies

Marina Militare, Circolo Ufficiali "Adriano Foscari", Castello 2168, Fondamenta Arsenale, Venice
20th - 21st June 2019

List of speakers' biography

Carlo Barbante is full Professor at the Ca'Foscari University of Venice, where he has been dealing with analytical methods development and paleoclimatic reconstructions since many years. He is associate researcher at the Institute for the Dynamics of Environmental Processes of the National Research Council of Italy. He is the main promoter of the establishment of the new CNR Institute of Polar Sciences. He has participated in several expeditions in polar regions and in the Alps and is author of more than 280 publications in high impact scientific journals (h-index 40). Professor of Earth's Climate at Ca'Foscari Harvard Summer School, he has been recently granted by the European Research Council with a prestigious Advanced Grant. He has been professor at the Accademia Nazionale dei Lincei and is an elected member of the Accademia delle Scienze detta dei XL and of the Istituto Veneto di Scienze Lettere ed Arti. He is National Representative in the H2020 Programme Committee on "Climate Action, Environment, Raw Material and Resource Efficiency" (University of Venice; Institute for the Dynamics of Environmental Processes - CNR). **Co-Chair of Polar Regions**

Fabrizio Benedetti MD is Professor of Neurophysiology and Human Physiology at the University of Turin Medical School, Turin, Italy, and Director of Medicine and Physiology of Hypoxia at the Plateau Rosà Laboratories, Plateau Rosà, Switzerland. He has been nominated member of The Academy of Europe and of the European Dana Alliance for the Brain. He is author of the book Placebo Effects (Oxford University Press, 2nd Edition, 2014), which received the Medical Book Award of the British Medical Association, and The Patient's Brain (Oxford University Press 2010). In 2012 he received the Seymour Solomon Award of the American Headache Society, in 2015 the William S Kroger Award of the American Society of Clinical Hypnosis. In 2015 he was nominated member of the Council of Scientists of the Human Frontiers Science Program Organization (University of Turin Medical School, Neuroscience Dept., Italy; Medicine & Physiology of Hypoxia, Plateau Rosà, Switzerland).

Mike Bentley is a glacial geologist with research interests focused on Antarctic environmental history, especially the history of the ice sheet in the Antarctic Peninsula-Weddell Sea region. He uses geomorphology and cosmogenic surface exposure dating to determine past ice sheet fluctuations, and works closely with geophysical modelers to ensure that the geologic record can be used effectively to constrain models of past and future ice sheet change. Mike is also helping to develop innovative new proxy records of Antarctic environmental change, and works closely with engineers to develop new technologies for access to subglacial environments. Mike is Chair of the UK National Committee for Antarctic Research and is a UK delegate to the Scientific Committee for Antarctic Research (Durham University).

Ian Brooks studied physics at the University of Manchester Institute for Science and Technology, staying there for a PhD in thunderstorm electrification processes. He moved to Scripps Institution of Oceanography for post-doctoral research in marine meteorology, returning to the UK and the University of Leeds in 2002. He is now a professor in the Institute for Climate and Atmospheric Science within the School of Earth and Environment. His research is primarily based around field measurements of atmospheric boundary layer processes, including atmosphere-ocean interactions and impacts on Arctic climate. He has undertaken four research cruises in the central Arctic ocean and two aircraft based measurement campaigns around Svalbard. He will be participating in the year-long measurement programme on and around the German icebreaker Polarstern during the forthcoming MOSAiC project (University of Leeds).

Peter Bruce is Wolfson Professor of Materials at the University of Oxford. His research interests embrace materials chemistry and electrochemistry, with a particular emphasis on energy storage, especially lithium and sodium batteries. Recent efforts have focused on the synthesis and understanding of new materials for lithium and sodium-ion batteries, on understanding anomalous oxygen redox processes in transition metal oxides used as high capacity Li-ion cathodes, the challenges of the lithium-air battery and the influence of order on the ionic conductivity of polymer electrolytes. His pioneering work has provided many advances. Peter received the Tilden Prize of the Royal Society of Chemistry in 2008, the Carl Wagner Award of the Electrochemical Society in 2011, the Liversidge Award of the Royal Society of Chemistry in 2016 and the Hughes Medal of the Royal Society in 2017. He has also been selected as Highly Cited Researcher by Thomson Reuters/Clarivate Analytics in 2015, 2016, 2017 and 2018. As well as directing the UK Energy Storage Hub (SuperStore), a consortium on solid-state batteries and a consortium on lithium batteries, Peter is a founder and Chief Scientist of the Faraday Institution, the UK centre for research on electrochemical energy storage. Peter also took up the position of Physical Secretary and Vice President of the Royal Society in November 2018 (The Royal Society; University of Oxford). **Co-Chair of Scientific Challenges of New Energy Technologies**

Matteo Caleo began his studies with Lamberto Maffei at the Scuola Normale Superiore in Pisa. During his PhD and Post-doc, he worked mainly on the role of neurotrophic factors in the degeneration and plasticity of the visual system. After becoming Group Leader at the CNR Neuroscience Institute in Pisa, he focused on the role of inter-hemispheric, transcallosal connections in the development and plasticity of the visual cortex. He also started a line of research devoted to the central effects of botulinum neurotoxins (BoNTs). In particular, he demonstrated that BoNT/A (widely used in clinical

neurology for treatment of dystonia and spasticity) is retrogradely transported to the central nervous system following peripheral administration. Recently, his group has focused on the study of neuronal plasticity in different pathological conditions (stroke, brain tumors, epilepsy) (Dept Biomedical Sciences, University of Padua; Neuroscience Institute - CNR).

Melody Clark is a NERC Individual Merit Promotion Scientist, with a visiting Chair at the University of the Highlands and Islands and I lead the Adaptations group at BAS. I study animals' adaptations to extreme cold and how they may react to predicted climate change; my particular interest is the use of molecular techniques to identify responses to change at the cellular level. Grant income is currently running at over £7M in the past 10 years, with the most recent significant grant being PI of the EU Marie Curie ITN: CACHE: CAlcium in a CHanging Environment, with a budget of circa €3.7M, which studied how molluscs produce their shells, with an emphasis on commercial shellfish species. In 2007 I was awarded the Senior Prize for Outstanding Women in Marine Biological Sciences Prize by the EU-FP6 Network of Excellence, Marine Genomics Europe and a DSc by Imperial College in 2015 (British Antarctic Survey).

Maurizio Corbetta is Professor and Chair of Neurology at the University of Padova; founding Director of the Padua Neuroscience Center; Professor of Neurology, Radiology, Neuroscience, and Bioengineering at Washington University School of Medicine. Dr. Corbetta has pioneered experiments on the neural mechanisms of human attention using Positron Emission Tomography (PET) and functional MRI (fMRI). He has identified two brain networks dedicated to attention control, and developed a functional anatomical model of human attention. His clinical work has focused on the physiological correlates of focal injury. He is currently developing novel methods for studying the functional organization of the brain. His main research interests are the behavioral relevance of intrinsic brain activity, and the effects of focal injuries on the brain network organization (Department of Neuroscience and Padova Neuroscience Center, University of Padua).

Serena Corr is Chair of Functional Nanomaterials in Chemical and Biological Engineering at the University of Sheffield, where she is director of the Energy Storage Research Centre. Her research focuses on the design, synthesis and characterization of functional nanomaterials in particular for applications in energy storage and the environment, with an emphasis on understanding their intimate structure-property interplay (Nature Mater., Nano Lett., J. Am. Chem. Soc., PRL, Chem. Mater.). Her work has been recognised by awards from learned societies including the Royal Irish Academy and the Royal Society of Chemistry and has attracted >£4M in grant funding as PI (>£20M as co-I). She leads multi-institutional, interdisciplinary research activities including SUPERGEN Grand Challenge projects on Li-ion batteries and is co-director and co-investigator on the Faraday Institution (FI) Degradation Solid State Battery projects, respectively. She sits on the FI Training and Diversity Panel of the Faraday Institution, is a member of SUPERGEN Energy Storage Science Board and EPSRC Energy Strategic Advisory Committee, and sits on beamtime panels at facilities in the UK and EU. She is committed to ECR mentoring, promotion ofwomen in science and public outreach activities (>60 invited/plenary talks), with >15 years' experience in nanostructured materials development (University of Sheffield).

Susanna Corti is senior scientist at the Institute of Atmospheric Sciences and Climate (ISAC) of the Consiglio Nazionale delle Ricerche (CNR). She has a wide range of scientific interests across the physics of weather and climate. This includes sub-seasonal to decadal ensemble climate predictions; High resolution climate modelling; Weather and Climate predictability; Impact of stochastic physical parameterizations in model simulations from sub-seasonal to centennial time-scales. She contributed to the IPCC WG1 (Fifth Assessment Report) and she has been appointed as a Lead Author for the forthcoming IPCC WG1 AR6. During her career she worked at the European Centre for Medium-range Weather Forecasts (ECMWF) as consultant in the Predictability Section of the Research Department in the framework of two EU-funded projects: "Short-term climate variability and THOR (Thermohaline Overturning at Risk?). Currently, she is Principal Investigator (PI) for CNR of four European projects, executive Editor of "Climate Dynamics" (since 2007), member of the Joint Scientific Committee (JSC) of the World Climate Research Programme (WCRP) and member of the Scientific Advisory Committee of ECMWF (Institute of Atmospheric Sciences and Climate - CNR).

Yulong Ding founding Chamberlain Chair of Chemical Engineering and RAEng-Highview Chair of Cryogenic Energy Storage, is Director of Birmingham Centre for Energy Storage. He focuses on thermal and liquid air energy storage and process intensification, and leads a group of 30+ PDRAs & PhDs with a £30m research portfolio. He is PI of EPSRC Supergen Storage Network Plus 2019 (EP/S032622/1) and NexGen-TEST project (EP/L014211/1), and Co-I of EPSRC Supergen Energy Storage Hub (EP/L019469), JUICED Hub (EP/R023662/1), JUICE (EP/P003605/1) and Programme Grant GaN-Dimond (EP/P00945X/1). He has 60+ patents & 250+ journal papers (H=60) and is recognised by 2011 The Engineer Energy & Environment and Grand Prix awards & 2018 ESIE Distinguished Energy Storage Individual Award (University of Birmingham).

Elizabeth Fisher is based at University College London, Institute of Neurology; her group focusses on creating novel mouse models to understand neurodegenerative disease, specifically aspects of Down syndrome (collaboration with Professor Victor Tybulewicz, Frances Crick Institute, UK) with respect to Alzheimer disease, and motor neuron degeneration, mostly amyotrophic lateral sclerosis. EF joined UCL in 2001 and prior to that ran a lab at Imperial College London from 1990 to 2001. She was a postdoc at the Whitehead Institute, MIT (with David Page) from 1987 to 1990, having undertaken a PhD at Imperial College/MRC Harwell with Steve Brown and Mary Lyon. She was an undergraduate at the University of Oxford. EF was elected a Fellow of the Academy of Medical Sciences in 2007. In 2009 she became a Member of EMBO, and in 2010 became a Fellow of the Royal Society of Biology. She holds a Wellcome Trust Senior Investigators award jointly with Professor Tybulewicz (University College London).

Jane Francis is Director of the British Antarctic Survey, Cambridge. A geologist by training from the University of Southampton, she was a NERC Postdoctoral Fellow in London, Australian Research Associate at the University of Adelaide, a Royal Society Leverhulme Trust Senior Research Fellow and Professor of Palaeoclimatology at the University of Leeds, where she was also Dean of the Faculty of Environment and is now Chancellor. Her research interests include ancient climates and fossil plants from the Arctic and Antarctica. She is involved with international polar organisations such as the Antarctic Treaty and European Polar Board and on several advisory boards for national polar programmes. She was awarded the Polar Medal for her contribution to British polar research and was appointed as Dame Commander of the Order of St Michael and St George for services to UK polar science and diplomacy (British Antarctic Survey).

Clare Grey Her recent honours and awards include the 2011 Royal Society Kavli Lecture and Medal for work relating to the Environment/Energy, Honorary PhD Degrees from the Universities of Orleans (2012) and Lancaster (2013), the Gunther Laukien Award from the Experimental NMR Conference (2013), the Research Award from the International Battery Association (2013), the Royal Society Davy Award (2014), the Arfvedson-Schlenk-Preis from the German Chemical Society (2015), the SociétéChimique de France, French-British Prize (2017) and the Solid State Ionics Galvani-Nernst-Wagner Mid-Career Award (2017). She is a foreign member of the American Academy of Arts and Sciences (2017) and a Fellow of the Electrochemical Society (2017) (University of Cambridge).

Karen Heywood is Professor of Physical Oceanography at the University of East Anglia. She was the first female professor of oceanography in the UK. Her research focuses on observations of ocean processes that are important for climate, particularly in polar regions. She is primarily an observational oceanographer and has led numerous research voyages to the Southern Ocean. She is enthused by the new opportunities offered by ocean gliders, autonomous robots that can make measurements of the ocean in places that are otherwise too difficult to access. She is President of the Ocean Science Division of the European Geosciences Union (University of East Anglia).

Masud Husain is Professor of Neurology & Cognitive Neuroscience at the University of Oxford. He holds a Wellcome Trust Principal Research Fellowship and is Professorial Fellow at New College Oxford. After completing his doctoral thesis in spatial vision and clinical training at Oxford, he studied disorders of attention in clinical populations. Masud held a Wellcome Trust Senior Fellowship, first at Imperial College and then at University College London. At UCL he was Deputy Director of the Institute of Cognitive Neuroscience and Head of Dept Brain Repair & Rehabilitation at the Institute of Neurology. His current research focuses on understanding mechanisms underlying short-term memory and motivation, in healthy people and in patients with neurological disorders. His work is funded by The Wellcome Trust (University of Oxford).

Massimo Inguscio is President of the Italian National Research Council (CNR), of which he had previously directed the Department of Physical Sciences, and President of the Council of Presidents of Public Research Bodies. Member of the National Academy of Lincei, has been President of the National Metrology Institute (NMI). He has been given the title of Grand Officer of the Order of Merit of the Italian Republic, awarded the Legion d'Honneur by the French Government, received the prize Enrico Fermi of Italian Physical Society, the Herbert Walther Award of the Optical Society of America and the German Physical Society and he has been included in the Thomson-Reuters list of "most influential scientific minds" for his activities in atomic physics research close to absolute zero at LENS - European Laboratory for Non-linear Spectroscopy, University of Florence, of which he was director. He is author of more than 300 scientific papers, which have been cited around 14000 times for an h-index of 60 (CNR).

Saiful Islam is Professor of Materials Chemistry at the University of Bath, and a Royal Society Wolfson Research Merit award holder. He grew up in London and obtained his Chemistry degree and PhD from University College London, followed by a Postdoctoral Fellowship at the Eastman Kodak Labs in New York, USA. He returned to the UK to the University of Surrey, before joining the University of Bath in 2006. His research interests include structural, transport and computational studies of new materials for lithium- and sodium-batteries, and perovskite solar cells. He has presented more than 75 invited talks at international conferences, and has around 210 publications (h=71). Recent awards include the 2017 Royal Society of Chemistry Peter Day Award for Materials Chemistry. Saiful presented the 80th anniversary Royal Institution Christmas Lectures in 2016 for BBC TV on the theme of energy and entitled 'Supercharged: Fuelling the Future'. He sits on the RSC international advisory boards of the Journal of Materials Chemistry A and Energy & Environmental Science. He is PI of the EPSRC programme grant on 'Energy Materials-Computational Solutions'. He is a Patron of Humanists UK, and has served on the Diversity Committee of the Royal Society (University of Bath).

Heidi Johansen-Berg is a Wellcome Principal Research Fellow and Director of the Wellcome Centre for Integrative Neuroimaging (WIN), based at FMRIB at the University of Oxford. The WIN aims to exploit the ability of non-invasive neuroimaging to bridge the gap between laboratory neuroscience and human health. Heidi's own research group investigates plasticity and recovery in the sensorimotor system, with particular focus on white matter plasticity. The group's research uses a variety of neuroimaging and stimulation tools in healthy human volunteers across the lifespan, individuals with brain damage, and rodents (University of Oxford).

Rosabruna La Ferla (degree in Biological Sciences) is Senior Researcher of CNR. Since the beginning of her career, her interest has been devoted to the microbial ecology, specifically studied in aquatic systems (seawater, brackish, freshwater environments and brines). Thereafter, she has also turned her attention to other matrices including permafrost, organisms and microplastics. For over 20 years, she has coordinated the working group of biological oceanography of CNR Institutes, in the frame of several national and European projects carried out in Mediterranean Sea and Polar environments. A

common thread in many of her researches have been the extreme environments. She has 10+ years of collaboration with the University of Las Palmas de Gran Canaria (ULPGC), the Federal University of Rio de Janeiro (UFRJ) and the Chinese Academy of Sciences (CAS) (Institute of Polar Sciences - CNR).

Francesco La Via was born in Catania, Italy, in September 1961. He received the M.S. degree in physics from Catania University, Catania, Italy, in 1985. From 1985 to 1990, he had a fellowship at STM. In 1990, he joined the CNR-IMM, as a researcher. In 2001 he became senior researcher of the CNR-IMM and he is responsible of the research group that work on the new metallization schemes for silicon and silicon carbide, new CVD reactors and new processes for silicon carbide epitaxy and hetero-epitaxy. He is responsible of several industrial research projects in the field of SiC epitaxial growth and new systems for CVD and sublimation growth. In this period, he has published more than 300 papers on JCR journals. He has presented several invited contributions to international conferences and has organized several conferences and tutorials (Institute for Microelectronics and Microsystems - CNR).

Stafford Lightman is Professor of Medicine at the University of Bristol and was the founding Director of the Henry Wellcome Laboratories for Integrative Neuroscience and Endocrinology. He started his scientific career working on catecholamines and opioid peptides with Leslie Iversen at the University of Cambridge and provided some of the first data linking opioid peptides with the regulation of neurohypophysial function. More recently he has been investigating the dynamics underlying stress hormone secretion. Using a combination of mathematical modelling and biological testing he has shown that adrenal stress hormones oscillate and that these oscillations emerge as a natural consequence of the interaction between the pituitary gland and the adrenal cortex. He is translating these findings to man and has shown that both emotional state and neural circuitry are sensitive to changes in the pattern of cortisol secretion. Stafford Lightman is a Fellow of The Royal Society and a founder Fellow of the Academy of Medical Sciences. He was the founder Editor-in-Chief of the Journal of Neuroendocrinology, the founder Chairman of the Pituitary Foundation and a Council Member of the Physiological Society (University of Bristol).

Salvatore Lombardo (B.S. and Ph.D. in Physics) joined the Italian National Research Council in 1994 as Staff Scientist, in 2001 he became Senior Scientist, and from 2007 he is Research Director of CNR at the Institute for Microelectronics and Microsystems (IMM). In his research, in the field of semiconductor devices (MOS, flash, photodetectors, photovoltaics), he has coordinated several national and European projects, and collaborations in USA, Singapore, and Israel. He is author of more than 250 scientific articles, with more than 5,400 citations, 10 US patents and H index of 35. His current research is in the field of photovoltaics and silicon photomultipliers for NIRS functional brain cortex imaging (Institute for Microelectronics and Microsystems - CNR).

Michela Matteoli received her PhD from the University of Pisa. She has been postdoctoral fellow at the Yale School of Medicine and Visiting Scientist at the Virginia School of Medicine. In 1992, she established her laboratory at the CNR-Center of Molecular and Cellular Pharmacology in Milano. In 2002 she became Associate Professor and in 2011 Full Professor of Pharmacology at the University of Milano. Since 2015, she is Full Professor at Humanitas University. She is Head of Humanitas Neurocenter and has been Director of the CNR Institute of Neuroscience from 2014 to 2018. She obtained awards from Sapio and Atena for scientific achievements and in 2013 received the Mid-Career Nature Mentoring Award. She is member of EMBO and of the Academia Europaea and is in the advisory Board of different international institutions (Humanitas University; Neuroscience Institute - CNR).

Paolo Matthiae is the discoverer of Ebla in Syria where he directed 47 work seasons since 1964 till 2010. Emeritus Professor of Archaeology and Art History of the Ancient Near East in Sapienza University of Rome, is Member of the National Academies of Italy, France, Austria, Sweden and of the German Archaeological Institute, received the ad Honorem Doctorate of the Universities of Madrid and Copenhagen, the Merit Syrien and the title of Knight of Great Cross of Italy. President of the International Congress of the Archaeology of Ancient Near East since 1998 is a world authority in the studies on the Ancient Near East. Between his most recent publications Studies on the Archaeology of Ebla, 1980-2010 (Wiesbaden 2013), Distruzioni, saccheggi e rinascite. Gli attacchi al patrimonio artistico dall'Antichità all'Isis (Milano 2015), Dalla terra alla storia. Scoperte leggendarie di archeologia orientale (Torino 2018) (Emeritus Professor of Archaeology and Art History of the Ancient Near East; National Academy of Lincei).

Neil McKeown is the Crawford Tercentenary Chair of Chemistry at The University of Edinburgh. His research involves using organic chemistry to develop novel porous materials, both crystalline and amorphous, for use in molecular separations, catalysis and sensors. He is the inventor of the class of materials called Polymers of Intrinsic Microporosity (PIMs), which have become the focus of international activity in numerous areas of research including as membranes for gas separations of importance to energy and the environment and as ion selective membranes for redox-flow batteries. In addition, a PIM is the key component in a sensor, commercialised by 3M, which protects the health of workers in environments with high levels of organic vapours (University of Edinburgh).

Cesare Montecucco works at the University of Padova in the Neuroparalysis and Neuroregeneration Laboratory. Major findings: a) the identification and characterization of the metalloprotease activity of the neurotoxins responsible for tetanus and botulism, b) the identification of their proteins targets (SNAREs) including sites of cleavage and mechanism of specific recognition, c) the metalloprotease activity and target of the anthrax lethal factor, d) the mechanism of action of two major virulence factors of H. pylori: VacA and NapA, e) the mechanism of action of the snake presynaptic PLA2 neurotoxins, f) the chemokine CXCL12 is a very powerful growth factor the neuronal axons. He has received several scientific prizes and is member of four academies. He has published 255 experimental papers, 82 reviews, hypothesis and position papers and 3 books which received about 32000 citations with an H factor of 92 (Dept. of Biomedical Sciences, University of Padua; Institute of Neuroscience - CNR).

Mauro Pasta is an associate professor in the Materials department at the University of Oxford and a fellow at St. Edmund Hall. Currently, he is leading the SOLBAT (solid-state metal anode batteries) project within the Faraday Institution, the UK's independent institute for electrochemical energy storage science and technology. Previously, he was a postdoctoral fellow in the Materials Science & Engineering department at Stanford University working on batteries for grid-scale energy storage. He co-founded two startup companies, Cuberg, developing batteries for high temperature applications and Natron Energy, developing a high power, long cycle life, low-cost battery technology for industrial applications. He received his PhD, MSc, BSc in Industrial Chemistry from the University of Milan (Italy). His research focuses on the electrochemistry and materials science of energy storage and conversion devices, with focus on technologies beyond Li-ion batteries (University of Oxford).

Tullio Pozzan Director of the Department of Biomedical Sciences of the CNR, Full Professor of General Pathology, University of Padova. Member of the European Molecular Biology Organization, EMBO. Member of the Academia Galileiana, Member of the Academia Europaea, President of the European Cell Biology Organisation, Feltrinelli Prize for Medicine (awarded by the Accademia dei Lincei), President of the Gordon Conference on Ca2+ signalling, President of the Italian Society of Cell Biology, Member of the Accademia dei Lincei, Teodor Bucher medal (awarded by FEBS), Member of the National Academy of Sciences of the USA, Murlin Medal (Rochester, NY), Member of the "Istituto Veneto di Scienze,Lettere ed Arti", Laurea ad Honorem, University of Geneva. Fellow of the Royal Society of Canada, Foreign Member of the Royal Society of London (Department of Biomedical Sciences - CNR). **Co-Chair of Neuroscience**

Aurora Rizzo received PhD Degree in "Innovative Materials and Technology", Università del Salento. In the period 2008 -2009, she joined the group of Prof. Olle Inganäs at the University of Linköping (Sweden). She is currently a Researcher at CNR-NANOTEC and her research interests include the design, fabrication and characterization of solar cells and optoelectronic devices based on colloidal nanocrystals and hybrid perovskite. She is author of >70 publications (h-index: 28, scholar). In the period 2015-2019, she is PI of the project "2D ECO Two-Dimensional Colloidal Metal Dichalcogenides based Energy-Conversion Photovoltaics" (Founded by MIUR, "Scientific Independence of Young Researcher"). She is now responsible of a joint CNR-ENI project on perovskite photovoltaics and partner of the Royal Society e-GAP2 International Exchanges Scheme – Project: "Energy harvesting fabric" (Institute of Nanotechnology - CNR).

Rosamaria Salvatori geoscientist, senior researcher at CNR-IIA; main Interests in environmental studies in Polar and Mediterranean areas using remote sensed images with different spatial and spectral resolution and in developing geographic information systems. Her research activity is focused on the spectroradiometric properties of different natural surfaces, aimed to the interpretation of remote sensed images. She carried out, as principal investigator, field surveys in Polar Regions (Antarctica and Arctic) for studies on the spectroradiometric characteristics of snow and ice, and on gas interactions at snow/air interface. From 2011 to present, Professor of "Remote Sensing and GIS" at Rome University "Sapienza", Dept. of Ecobiology (Institute of Polar Sciences - CNR).

Elisa Sani is Researcher at National Institute of Optics (INO-CNR), Firenze, Italy. Since a decade, she is working in the broad field of optical properties of novel materials for solar energy applications. Main research lines are: nanostructures suspended in liquids (nanofluids) for low-mid temperature solar collectors; innovative solid absorbers for high-temperature solar plants; optically active materials for photovoltaics (wavelength converters). She is member of the Management Committee of the COST Action "Overcoming barriers to nanofluid market uptake (NANOUPTAKE)". She is author of 132 publications: 87 papers in peer-reviewed international journals, 41 ISI and/or Scopus-indexed conference contributions, 2 book chapters, 2 patents. ORCID 0000-0001-9854-2892 (National Institute of Optics - CNR).

Gianluigi Serianni PhD in Physics (1996). Research field: plasma physics, controlled thermonuclear fusion: physics and diagnostics of the edge region of fusion plasmas; physics and diagnostics of weakly ionised plasmas (magnetron sources, magneto-plasma-dynamic thrusters, plasma torches). In charge of the diagnostic systems for the boundary region of the RFX experiment (1995–2008) and of the technical personnel dedicated to measurement systems of the RFX experiment (2002–2009). Current research field: physics and diagnostics of negative ion sources and neutral beam injectors (NBI). Duties: design of SPIDER diagnostic calorimeter (2008-2019); deputy responsible of the programme "Physics of NBI" at Consorzio RFX (2009-2017); deputy responsible of design, realization and operations of the NIO1 experiment; responsible for the scientific exploitation of SPIDER, the 100keV/40A prototype of ITER NBI source (Institute for Plasma Science and Technology - CNR).

Corrado Spinella is Head of the Department of Physical Science and Technologies of Matter of CNR. His research activity (consisting of more than 250 papers) is focused on materials science and technology for microelectronics applications. A common feature characterizing all his scientific work is the investigation of the fundamental properties of materials and the finalization of results to concrete technological advances, through collaborations with the Microelectronics Industry. Thanks to innovative methodologies based on advanced electron microscopy techniques he has achieved significant results in many fields concerning the front–end processing of semiconducting materials used for microelectronics (Department of Physical Sciences **Co-Chair of Scientific Challenges of New Energy Technologies**

Andrea Spolaor is interesting in paleoclimate and snow chemistry studies including elements and compounds post-depositional and photochemical process in surface snow and snow-atmosphere interactions. His main topic is trace elements measurements in ice cores with particular focusing on iron (includes its chemical speciation) for its role in the ocean fertilization, and halogens measurements for their connections with sea ice changes. He is also interested in the impact caused by the ancient civilization on atmospheric composition. He is involved in aerosol measurements in polar environment

for understand the natural cycle of trace elements, biogenic compound and black carbon and their possible changes in the recent decades. He participates in several field expeditions in Arctic, Antarctic and Alpine regions. He is actively involved in glacier mass balance estimations (Institute of Polar Sciences - CNR; University of Venice).

Karen Steel is a British scientist who studies the genetics of deafness, using the mouse as a model to identify the genes involved and to understand the molecular, cellular and physiological mechanisms involved. She is Professor of Sensory Function at the Wolfson Centre for Age-Related Diseases, King's College London. Previously she was Principal Investigator of the Genetics of Deafness research programme at the Wellcome Trust Sanger Institute. She had a leading role in the collaboration that uncovered Myo7a, the first gene to be implicated in deafness in mice and in humans. Most recently, she led the discovery of Mir-96 microRNA that is implicated in progressive hearing loss in mice and humans. Together with Professor Christine Petit, Steel won the Royal Society Brain Prize 2012 for pioneering work on the genetics of hearing and deafness (King's College London).

Tommaso Tesi PhD (2006) in Environmental Marine Sciences (University of Bologna). He is an expert of marine biogeochemistry with focus on climate change in present and ancient systems. He was awarded with two Marie Curie fellowships to work at the Oregon State University (USA) and University of Stockholm (Sweden). He became part of the Editorial Board of the Marine Chemistry journal (Elsevier) with focus on marine organic biomarkers. He is the Italian representative and member of IASC Marine Working Group as well as alternate representative of the European Polar Board. He has published 45 scientific papers in peer-reviewed journals dealing with the use of fossil biomarkers to investigate modern and paleo climate change. He has participated to 16 oceanographic expeditions in the Mediterranean Sea and Arctic combined accounting for over 200 days of at sea activities (Institute of Polar Sciences - CNR).

Angela Vincent is a neuroimmunologist who studies the role of autoimmunity -when the body accidently directs its immune response against itself- in diseases of the central and peripheral nervous system. Angela's work has made significant contributions to the diagnosis and experimental study of these conditions, and demonstrated that the patients improve when levels of harmful autoantibodies are reduced by treatments. She discovered a new form of myasthenia gravis - an autoimmune muscle condition - and that maternal antibodies to foetal proteins can lead to neurodevelopmental disorders in utero with long-term disability. In particular she found that previously rare and undefined diseases of the central nervous system can be caused by antibodies directed against proteins associated with potassium ion channels or glycine receptors. In 2009 Angela presented the Leslie Oliver Oration and was awarded the Association of British Neurologists' Medal. She was the Head of the Department of Clinical Neurology at the University of Oxford, 2005–2008, and was President of the International Society of Neuroimmunology, 2001-2004, and an Associate Editor of the scientific journal, Brain, 2004-2013 (University of Oxford). **Co-Chair of Neuroscience**

Angelo Pietro Viola The main research activity concerns the interaction and exchange processes between the surface and the lower layers of the atmosphere in polar areas. He carried out several experiments in Antarctica and in the Arctic. He currently coordinates the activities at the CNR Arctic station Dirigibile Italia in Ny Alesund (Svalbard). He is members of Research Infrastructure Committee of Svalbard (SIOS). He is deputy coordinator of the Working Group of Research in Svalbard of the Department of Sciences of the Earth System and Technologies for the Environment of CNR. He is the scientific coordinator of the digital infrastructure IADC (Italian Arctic Data Center) for the data collected at the arctic Station Dirigibile Italia. He is author and co-author of several peer reviews papers on the atmosphere on polar region (Institute of Polar Sciences - CNR).

Eric Wolff is a Royal Society Research Professor in the Department of Earth Sciences at Cambridge University. After graduating as a chemist, he has studied ice cores from the Antarctic and Greenland for the past 30 years, using them to understand changing climate, as well as changing levels of pollution in remote areas. He also carries out research into the chemistry of the lower parts of the Antarctic atmosphere. Until June 2013, he led a programme at the British Antarctic Survey. He chaired the science committee of the European Project for Ice Coring in Antarctica (EPICA), which produced 800,000 year records of climate from the Dome C (Antarctica) ice core and for many years co-chaired the international initiative (IPICS) to coordinate future ice core research. His main research goal is to understand the causes of climate evolution over recent glacial cycles (University of Cambridge). **Co-Chair of Polar Regions**

Matthew Wood is Professor of Neuroscience and Deputy Head of the Medical Sciences Division at the University of Oxford. He directs the Laboratory of RNA biology and Neuromuscular Disease investigating development of RNA-based medicines for neuromuscular disease focusing on the development of advanced generation antisense oligonucleotides for Duchenne muscular dystrophy and related neuromuscular conditions. He is currently Director of MDUK Oxford Neuromuscular Centre and Director of the Oxford Rare Disease Centre. He has pioneered the development of novel delivery systems including peptide and exosome-based technologies for the targeted delivery of macromolecular biologics, including oligonucleotides, to tissues including the brain. He is the founder of the biotech spin-outs Evox Therapeutics (developing therapeutic exosome technology) and PepGen (developing peptide based drug delivery technology), is an advisor to numerous research funding agencies including the UK Medical Research Council and is a director of the University of Oxford's technology transfer organisation, Oxford University Innovation (UK Science and Innovation Network Europe).