

# MAGSTR 2020 SPEAKERS



## **DR. JUAN RODRIGUEZ-CARVAJAL**

**Staff Scientist, Institute Laue-Langevin**

**Grenoble, France**

Dr. Rodriguez-Carvajal has a long experience in diffraction physics of neutrons and x-rays. He is an experimentalist with a strong component in computing and theoretical aspects of diffraction. He got his PhD at the University of Barcelona in 1984 and held different teaching positions in two universities of Barcelona. He got a position as a scientist researcher at the CSIC in the Materials Science Institute of Barcelona. From 1988 to 1994 he was Physicist at the ILL. From 1994 to 2006 he was working at the LLB and he came back

to the ILL to lead the Diffraction Group. He has been involved in large scale projects for developing new neutron sources. He has participated in many committees and selection panels for research projects. He has also a strong activity in training worldwide young researchers through many courses on diffraction and crystallography.

JRC's interests:

1. Data analysis and software development in Crystallography and Diffraction Physics.
2. Theoretical analysis of magnetic Structures. Frustration and low dimensional magnetism.
3. Physics of superconducting oxides, intermetallics, metal-Insulator transitions and magnetic ordering. Structural and magnetic aspects of oxides presenting colossal magnetoresistance, charge, spin and orbital ordering phenomena. Energy materials, and multiferroics.

Author of more than 430 papers in scientific journals and books. The number of article citations is more than 17800 (Web of Science), 28000 (Google Scholar). "Award for Distinguished Powder Diffractionist" from the International Committee of EPDIC (Warsaw, 2008), Barrett Award 2011 of the Denver X-ray Conference for "exceptional contributions to powder diffraction". Author of FULLPROF, one of the most used powder diffraction computer programs in the world.

## **DR. VÁCLAV PETŘÍČEK, CSC.**

**Senior Scientist**

**Institute of Physics of the Czech Academy of Sciences**

**Prague, Czech Republic**



Dr. Petříček studied physics mathematics and physics at the Charles University in Praha. From 1972 till now he works at the Institute of Physics of the Czech Academy of Sciences in Praha. During his one year's stay in Philip Coppens's lab he wrote the first version of the program Jana for refinement of modulated structures. Nowadays, after 30 years of development, program JANA serves to about 2000 users as a multi-purpose crystallographic package and it receives 300 citations every year. The latest JANA supports also powder diffraction data, simultaneous refinement against various data sets (powders, single crystals) and radiation sources (x-rays, neutrons, electrons), Time-of-Flight neutron diffraction data and refinement of symmetry deformation modes. The latest research of VP is oriented towards magnetic structures, which can be described using the superspace formalism similarly like modulated structures. The "Crystallographic approach" to magnetic structures has attracted many users from the field. VP also collaborates with his colleague Lukas Palatinus on implementation of refinement procedures for electron diffraction tomography data based on the dynamical theory of diffraction. For his scientific contribution he has been awarded by ICDD Barrett award in 2013 and the ECA Max Perutz prize in 2016.



## **DR J. MANUEL PEREZ-MATO**

**Professor (Retired)**

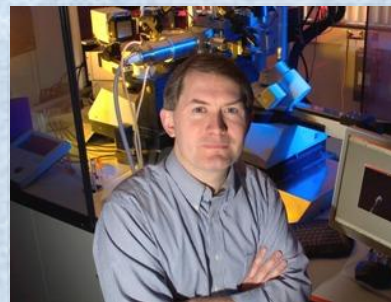
**Facultad de Ciencia y Tecnología Departamento de Física de la Materia Condensada, Universidad del Pais Vasco  
Bilbao, Spain**

Dr. Perez-Mato is one of the founders and developers of the Bilbao Crystallographic Server, a website with crystallographic programs freely available on internet. After more than 30 years as Professor of Condensed Matter Physics at the University of the Basque Country in Bilbao in

Spain, he has recently retired. His research interests include the characterization of phase transitions and ferroic materials, and the development of advanced methods in computational crystallography. His work has been especially intensive on the application of the superspace formalism in the investigation of modulated and modular structures. He has been member of the Executive Committee of the IUCr, and of the editorial committees of several scientific journals. His most recent activity has focused on the design of symmetry-based computational tools for the analysis of magnetic structures.

## **DR. BRANTON CABELL**

**Professor Department of Physics & Astronomy  
Brigham Young University  
Provo, Utah, USA**



Dr. Campbell earned an MA in physics and a PhD in materials science at the University of California at Santa Barbara and did post-doctoral research in the Materials Science Division at Argonne National Laboratory. He is now a Professor of Physics in the Department of Physics & Astronomy at Brigham Young University in the USA and a former Fulbright Scholar. His current research activities involve group-theoretical analysis of structural order parameters (atomic displacements, site occupancies, magnetic moments, lattice strains) arising from phase transitions, symmetry groups in

commensurate and modulated crystals, and experimental x-ray and neutron-scattering studies of structure-property relationships in complex oxides. He is an active co-developer (with Harold Stokes) of the ISOTROPY Software Suite for the application of symmetry groups and representational analysis to solid-state phase transitions, including extensive support for magnetic structures. He currently serves as the vice-chair of the US National Committee on Crystallography and as the chair of the Commission on Magnetic Structure, which recently developed the magCIF standard for communicating magnetic-structure data.

## **PROF. ANDREW WILLS**

**Professor**

**Department of Chemistry, University College London  
London, United Kingdom**

Professor in Chemistry at UCL. He joined UCL as a Royal Society Senior Research Fellow in 2002, following undergraduate studies at Oxford University, a Ph.D. from Edinburgh University and positions at McMaster University, the Centre d'Etudes Nucléaires de Grenoble - Commissariat à l'énergie atomique (CENG-CEA), the Centre National de la Recherche Scientifique (CNRS), and the Institut Max von Laue-Paul Langevin (ILL). His research interests are focussed on discovering new magnetic properties and searching for new states of matter. This field crosses the traditional disciplines of chemistry and physics and brings together symmetry theory, materials synthesis, physical property measurement, and research software engineering.







## **DR. MARGARIDA ISABEL SOUSA HENRIQUES**

**Scientist**

**Institute of Physics of the Czech Academy of Sciences**

**Prague, Czech Republic**

Dr. Henriques was born in Coimbra, Portugal and graduated in Materials Engineering at the University of Coimbra. She worked as a Materials Engineer before she obtained her PhD degree in Materials Science and Engineering from the University of Lisbon, Portugal. Her interest in new magnetic crystallography and electronic properties of new materials lead her for her post-doc work within the group of Structure Analysis of the Institute of Physics, Czech Academy of Sciences. She is involved in the development of the magnetic option of Jana2006, which concerns systematic data processing and solution of commensurate and incommensurate

magnetic structures. She also works in synthesis and characterization of new materials containing f-elements using x-ray and neutron scattering techniques under multi-extreme conditions. As a part of this work, she stayed at Institute Laue-Langevin in Grenoble, France. There she worked as a scientist in the Diffraction group, studying magnetic diffraction in single-crystals of magnetically frustrated materials. Margarida is also involved in the preparation and lecturing in workshops concerning the magnetic option of Jana2006 for scientists and students of worldwide renown neutron facilities and lecturing PhD students in Physics at Charles University in Prague. She is also a member of the Commission for Magnetic Structures of IUCR.

## **DR. BRIAN TOBY**

**Senior Physicist, Argonne National Laboratory**

**Illinois, USA**

Dr. Toby is a synchrotron and neutron powder diffraction crystallographer, with ~140 refereed papers and >11,000 citations. He oversaw construction of the 11-BM diffractometer and designed and implemented its world-leading automation system. He served as Chair of the US National Committee for Crystallography, and is active in the American Crystallographic Association, the Denver X-ray Conference and the International Centre for Diffraction Data. He developed the pdCIF standard for the International Union of Crystallography. He is an editor of the journal *Powder Diffraction* and served on the editorial board of *The Journal of Physical and Chemical Reference Data*. Dr. Toby's professional experience has been in targeted research in a number of employment environments, including chemical industry, academia and in the government sector both in a synchrotron and a research reactor facility. His research interests are in understanding how the arrangements of atoms in solids determine how the material functions, chemically or physically, and for the development and teaching of techniques for those studies. To do this, he works on software and instrument development as well as conducts measurements and analyzes the results. Brian has developed several novel software concepts: the first fitting program for PDFs for study of local order in crystalline materials and the first multi-field boolean search (a.k.a. PDF-4) application for powder diffraction databases. His best known programs include GSAS-II, CMPR, CIFTOOLS (pdCIFplot) and EXPGUI.

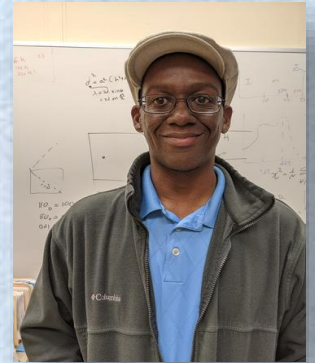


## **DR. WILLIAM RATCLIFF**

**Physicist**

**NIST Center for Neutron Scattering  
Nation Institute of Standards  
Gaithersburg, Maryland, USA  
and Adjunct Associate Professor**

**Department of Materials Science and Engineering  
University of Maryland, College Park, MD, USA**



Dr. Ratcliff received his BSE in Engineering Physics from the University of Michigan in 1997 and his Ph.D. in Physics from Rutgers university in 2003. He is the recipient of a Department of Commerce Bronze medal (the highest recognition awarded by NIST) and is a Fellow of the American Physical Society. He is a physicist at NIST and an adjunct associate professor in the Materials Science and Engineering department at the University of Maryland, College Park. His research interests include topological materials, multiferroics, and the application of AI to neutron scattering.



## **DR. EFRAIN E. RODRIGUEZ**

**Associate Professor & Director of Chemistry Graduate Program  
Department of Chemistry & Biochemistry, University of Maryland  
College Park, MD, USA**

Dr. Rodriguez received his B.S. from the Massachusetts Institute of Technology and his PhD from the University of California, Santa Barbara. At UCSB Efrain worked with Anthony K. Cheetham, FRS, on the solid state chemistry of technetium and rhenium oxides. After his PhD, Efrain went to the National Institute of Standards and Technology (NIST) for his National Research Council post-doctoral fellowship. Today, Efrain is an Associate Professor of Chemistry and Biochemistry at the University of Maryland, College Park. He also director of the Chemistry Graduate Program. His National Science Foundation CAREER Award centers on the synthesis of transition metal chalcogenides and understanding how their structures relate to their magnetic

and superconducting properties. Efrain received the Margaret C. Etter Early Career Award in 2019 from American Crystallographic Association. In 2020, he joined the Board of Directors at the American Institute of Physics and was awarded the Alexander von Humboldt Fellowship for Experienced Researchers. At the University of Maryland, Efrain has established a program in solid-state chemistry with a multidisciplinary approach for the preparation and study of functional inorganic materials. Efrain and his group study crystallography in order to establish structure-property relationships in materials, and his group heavily uses neutron and synchrotron X-ray diffraction techniques. A particular expertise of Efrain's group has been the use of neutrons to solve the magnetic structures of crystalline materials. Currently, Efrain is working on using crystallography and polarized neutron beams to study the phenomena of magnetoelectricity in metal phosphates with the olivine-type structure and metal silicates with the pyroxene-type structure.