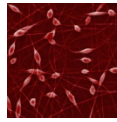


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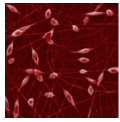


Chair's welcome

This year marks the 46th anniversary of the IOP Dielectrics Group (now part of the Dielectrics & Electrostatics Group), and formerly Dielectrics Society. On behalf of our group we would like to welcome all delegates to Dielectrics 2019 in Manchester. For the following two days we have organised an excellent program with international speakers that will present the latest advances in dielectric measurements and imaging, on the microstructure, chemistry and characterization of composite dielectrics, on the manufacturing of complex dielectrics and their applications, and on the interpretation of dielectric responses. We hope that the discussions that will follow will enable all delegates to further explore the crossover between these main themes thus advancing the field of Dielectrics.

Dr Sillas Hadjiloucas, University of Reading, UK

Dr Paul Holdstock, Co-Chair



Dielectrics 2019

Contacts

Please read this handbook prior to the event as it includes all of the information you will need while onsite at Dielectrics 2019. If you have any questions or require further information, please contact a member of the conference organising team, Keenda Sisouphanh or Michelle Bieger.

Keenda and Michelle will be on-site for the duration of the conference and will be based in the lower foyer area during registration times. Outside of these times and only in case of an emergency, please telephone:

Keenda Sisouphanh

Tel: +44 (0)20 7470 4890

Email: keenda.sisouphanh@iop.org

Conferences

Tel: +44 (0)7881 923 142

Email: conferences@iop.org

We hope that your time at the conference is trouble free. If you do encounter any problems, please report them to the conferences team who will make every effort to rectify the issue as soon as possible.

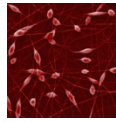
Disclaimer

The Institute of Physics, Pendulum Hotel & Manchester Conference Centre, and their approved representatives accept no responsibility for any accident, loss or damage to participant's property during the conference.

Social media



Follow and join the conversation at #IOPdielec2019

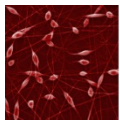


Scientific committee

- Dr Keith Butler, Science and Technology Facilities Council, UK
- Professor William Coffey, University of Dublin, Ireland
- Professor John Fothergill, John Fothergill Consultancy, UK
- Dr Nic Green, University of Southampton, UK
- Dr Sillas Hadjiloucas, University of Reading, UK
- Dr Paul Holdstock, Holdstock Technical Services, UK
- Dr Shahid Hussain, QinetiQ, UK
- Dr Nadarajah Manivannan, Brunel University, UK
- Dr James Matthews, University of Bristol, UK
- Professor Geoff Mitchell, Politécnico de Leiria, Portugal
- Dr Anna Regoutz, Imperial College London, UK
- Dr Matthew Ryder, Oak Ridge National Laboratory, USA

International advisory group

- Catherine Elissalde, Institut de Chimie de la Matière Condensée de Bordeaux, France
- David Cann, Oregon State University, USA
- Robert Freer, The University of Manchester, UK
- John Fothergill, University of Leicester, UK
- Simon Rowland, The University of Manchester, UK
- Anthony West, The University of Sheffield, UK
- Jagdish Vij, Trinity College Dublin, UK



Dielectrics 2019

Venue

The conference will take place at the Pendulum Hotel and Manchester Conference Centre situated just 300 metres from Piccadilly train station and close to shopping, sporting and cultural activities.

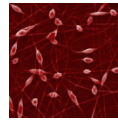


Pendulum Hotel & Manchester Conference Centre
Sackville Street
Manchester
M1 3BB
[Googlemaps](#)

Telephone: +44 (0) 161 955 8000

For information about the venue, please visit their website: www.pendulumhotel.co.uk/business

Event	Location
Registration	Lower foyer area
Technical talks	Pendulum suite
Posters	Pioneer room
Refreshments & Lunch	Pioneer room
Drinks reception	Pioneer room



Accommodation

Accommodation is NOT included in your registration fee

The IOP has negotiated a rate of £87 per night on a bed and breakfast basis. This will be in one of their city double bedrooms.

For more information please visit their website: www.pendulumhotel.co.uk/rooms

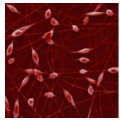
Check-in time is available from 14:00. Check-out is by 11:00. A luggage storage room is available. Breakfast is served from 07:00 midweek and 08:00 at weekends and is served in The Hub.

The Hub Bistro and Garden Bar with outdoor courtyard area are open daily serving, main meals, snacks and light bites from 9:00am until late daily. Their Wi-Fi access is complementary throughout the hotel and bedrooms.

Travel

For travel information, visit the conference [website](#).

If you are arriving by train, exit Manchester Piccadilly Train Station via the Taxi Rank entrance to the back of the station, cross the road to the Bulls Head Pub, and walk down through the university for 5 minutes, turn left and we're located at the end of Sackville Street. Alternatively, if you are travelling by car, please use the postcode M1 3BB for your SatNav, there is a car-park adjacent to the Hotel on Charles Street, midweek charges per 24 hours parking is £10.00 and at the weekend just £2.00, you will pay on departure from the car-park.

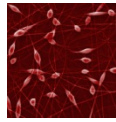


Dielectrics 2019

Programme

Thursday 11th April

- 08:45 **Joint session welcoming address (Closing of electrostatics/opening of dielectrics)**
Joint session 1: Dielectrics and Electrostatics I
Chair: S Hadjiloucas, University of Reading, UK
- 09:00 **Influence of electrode spacing on a symmetrical washer-type electrohydrodynamic conduction pump**
M Daaboul, University of Balamand, Lebanon
- 09:20 **Time resolved measurement of dielectric particles velocity in standing wave electric conveyor using PTV technique**
N Zouzou, Université de Poitiers, France
- 09:40 **Dielectric measurements for the examination of electrostatic charging of powders**
I Kiss, Budapest University of Technology & Economics, Hungary
- 10:00 **Phased-array metasurface modeling using the MoM-GEC method**
I Soltani, National Engineering School of Tunis, Tunisia
- 10:20 (Invited) **Electrical capacitance tomography for dielectric measurement**
W Yang, University of Manchester, UK
- 10:50 Refreshments and Exhibition - Pioneer room
- Joint session 2: Dielectrics and Electrostatics II**
Chair: N Green, University of Southampton, UK
- 11:30 (Plenary) **Oxide based memristive devices: current status of understanding and future prospects**
R Dittmann, Forschungszentrum Juelich, Germany
- 12:30 Lunch - Pioneer room
- Session 3: Manufacturing of complex dielectrics and novel applications**
Chair: C Elissalde, ICMCB-CNRS, France
- 13:30 (Invited) **Memristive technologies: a viable pathway for beyond Moore electronics and AI**
T Prodromakis, University of Southampton, UK
- 14:00 **Electrocaloric effects in multilayer capacitors exceed magnetocaloric effects in prototype cooling devices**



N Mathur, University of Cambridge, UK

14:30 **Dielectric meta materials using direct digital manufacturing**
G Mitchell, Institute Polytechnic of Leiria, Portugal

15:00 Refreshments and exhibition - Pioneer room

Session 4: Microstructure and chemistry of composite dielectrics
Chair: N Mathur, University of Cambridge, UK

15:30 (Invited) **Microstructure and chemistry in dielectric based ceramics and composites: Unveiling the potential of low temperature processing approaches**
C Elissalde, ICMCB-CNRS, France

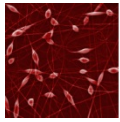
16:00 (Invited) **Structural details of A-site substitution in LLTO perovskites. The importance of the amount of vacancies and its distribution on transport properties**
A Varez, Universidad Carlos III de Madrid, Spain

16:30 **BaTiO₃-Bi(Zn_{1/2}Ti_{1/2})O₃ Relaxor materials: Role of non-stoichiometry**
D Cann, Oregon State University, USA

17:00 (Invited) **Microstructural imaging of grains and micron size defects of metallic structures using quantum well hall effect (QWHE) sensors**
M Missous, University of Manchester, UK

17:30 Close

19:00 Dinner at Zouk restaurant



Dielectrics 2019

Friday 12th April

Session 5: Interpretation of dielectrics responses

Chair: J Vij, University of Dublin, Ireland

- 09:00 (Invited) **The riddle of colossal permittivity**
S Hepplestone, University of Exeter, UK
- 09:30 (Invited) **Anomalous dielectric relaxation in the context of the debye model of escape of dipoles over a potential barrier**
W Coffey, University of Dublin, Ireland
- 10:00 (Invited) **A modified maxwell garnett model: hysteresis in phase change materials**
N Green, University of Southampton, UK
- 10:30 (Invited) **Finite element modelling: Studying the effect of microstructures in dielectric materials**
J Dean, University of Sheffield, UK
- 11:00 (Invited) **Analytical formula for the linear complex permittivity of isotropic polar fluids**
P Déjardin, Université de Perpignan via Domitia - Lamps, France
- 11:20 Refreshments - Pioneer room

Session 6: Measurement of dielectrics responses

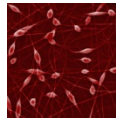
Chair: W Coffey, University of Dublin, Ireland

- 11:50 (Invited) **Measurements on low-loss dielectrics in the frequency range 1 to 70 MHz by using a Vector Network Analyser**
A Gregory, National Physical Laboratory, UK
- 12:20 (Invited) **Distortions in the structures of the twist bend nematic phase of a bent-core liquid crystal by electric field using dielectric spectroscopy**
J Vij, University of Dublin, Ireland
- 12:50 **New functionalities from ferroelectric domain walls**
M Gregg, Queen's University Belfast, UK
- 13:20 Lunch and poster session - Pioneer room

Session 7: Interpretation of dielectrics responses session II

Chair: S Hadjiloucas, University of Reading, UK

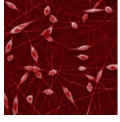
- 14:20 (Invited) **Understanding and controlling the dielectric response of porous materials**



M Ryder, Oak Ridge National Laboratory, USA

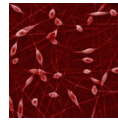
- 14:50 (Invited) **Relaxor behaviour and disorder in tetragonal tungsten bronzes**
F Morrison, University of St Andrews, UK
- 15:20 **Potentialities of flexoelectric effect in soft polymer films for electromechanical applications**
B Guiffard, University of Nantes, France
- 15:40 **Combination of voltage response method with non-contact electrostatic voltage measurement to determine the dielectric response of insulating materials**
Z Tamus, Budapest University of Technology & Economics, Hungary
- 16:00 **Charged interfaces in ferroelectric materials**
M Maglione, University of Bordeaux, France
- 16:20 **Correlation between structure with dielectric and ferroelectric properties for the lead-free electro-ceramics based on $\text{Ba}_{1-x}\text{Ca}_x\text{Ti}_{0.9}\text{Zr}_{0.1}\text{O}_3$**
G Herrera, Centro de Investigación en Materiales Avanzados, Mexico
- 16:40 Closing remarks

The programme will also be included in delegate pack, which you will receive on arrival at the conference. Please note the programme is subject to change.



[Poster programme](#)

- P1. Monitoring permittivity of cable insulation polymers using inter-digital capacitive sensors**
N Bowler, Università di Bologna, USA
- P2. Bond- graph input-state-output port-hamiltonian formulation of memristive networks for emulation of Josephson junction circuits**
S Hadjiloucas, University of Reading, UK
- P3. A modified maxwell garnett model: hysteresis in phase change materials**
N Green, University of Southampton, UK
- P4. Correlation between structure with dielectric and ferroelectric properties for the lead-free electro-ceramics based on $\text{Ba}_{1-x}\text{Ca}_x\text{Ti}_{0.9}\text{Zr}_{0.1}\text{O}_3$**
G Herrera, Centro de Investigación en Materiales Avanzados, Mexico



Registration

The registration desk will be located in the lower foyer area at the times listed below. Attendees will receive on arrival, a welcome pack which contains a copy of the programme, a pen and pad, and a conference badge.

Thursday 11 April 08:30 – 17:30

Friday 12 April 08:30 – 16:30

Outside of registration times and only in the case of an emergency, please call 07881 923 142.

Participants are asked to wear their badges at all times throughout the conference to help with security and identify fellow participants. Replacement badges can be issued at the registration desk for £2.50 each.

The abstracts will be available in digital format only and can be downloaded from the website. If you want a paper copy of the abstracts to refer to while on-site at the conference, please print a personal copy.

Catering

Catering will be provided at set times throughout the conference and served in the Pioneer Room. Please refer to the programme for timings.

Social Programme

Conference Dinner

The conference dinner held on Thursday 11 April at Zouk Tea Bar & Grill restaurant. The dinner will include a three course menu with half a bottle of wine per person.

Zouk Tea Bar & Grill

Unit 5, The Quadrangle
Chester Street
Manchester
M1 5QS

Tel: 0161 2331 090

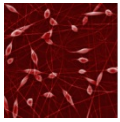
[Googlemaps](#)

Dietary requirements

Participants with dietary requirements are asked to notify the conference office by email prior to their arrival. It will not be possible to provide an alternative menu unless prior notification has been received. Please email keenda.sisouphanh@iop.org if you have any queries.

Payment

The organiser reserves the right to refuse admission to any participant who has failed to pay their registration fee prior to the event.



Dielectrics 2019

Sponsors

Exhibitors



Advanced Energy

www.trekinc.com

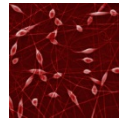
Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes. With the acquisition of Trek in 2018, AE has broadened its high voltage portfolio and expanded its expertise to include electrostatics, enabling new solutions for industrial process control and materials research innovations.



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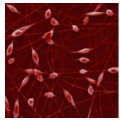
Zurich Instruments is a manufacturer of test & measurement equipment for advanced research & development applications. The instruments use LabOne® control software that sets a benchmark for efficient instrumentation control and a good user experience. This progressive approach reduces the complexity of laboratory setups, removes sources of problems and supports new measurement strategies that accelerate the progress of research. Zurich Instruments' portfolio comprises lock-in amplifiers, arbitrary waveform generators, impedance analyzers, quantum computing control systems, phase-locked loops and boxcar averagers.



Dielectrics 2019

Co-sponsor

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Presenter instructions

The Pendulum suite will be equipped with audio-visual aids listed below:

- Projector and screen display in 16:9 ratio
- PC and a seamless switcher
- PA system with PC sound kit and Microsoft office software
- Hand held and lapel microphones

The AV technician will be on hand throughout the conference to assist presenters to upload their presentation onto the in-house PC in the lectern or to link up their own laptops.

If you require any additional equipment, please email keenda.sisouphanh@iop.org

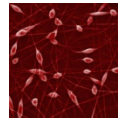
- Invited talks: 20 minutes talk + 10 minutes questions
- Oral presentations: 15 minutes talk + 5 minutes questions
- Plenary sessions are 1 hour

Instructions for speakers

- We recommend presenters bring their presentation on a USB stick to load their talk onto the PC located in the Pendulum Suite.
- Your presentation should be loaded on to the PC located in the conference room in the break preceding the start of your session. Please save your presentation file in the appropriate named folder saved on the desktop. Direct connection of personal laptops is the alternative approach.
- Presenters are asked to prepare their talks to match the allocated times in the programme which will be strictly enforced by the conference chairs.

Format and technical requirements

- The meeting room is large, so speakers should be used and a minimum of 16-point font size in PowerPoint slides to ensure legibility.
- To avoid potential problems with display fonts, please only use fonts common to both platforms (Arial, Courier, Courier New, Geneva, Georgia, Helvetica, Times, Times New Roman).
- For images in your presentations, it is preferable that the images are in jpg format.
- If you have embedded video files to your presentation, they must be any of the following formats mpg, mpeg, wmv avi or QuickTime (mov)
- Do not forget to upload any video files separately in addition to your PowerPoint presentation.



Posters

Posters will be located in the Pioneer room throughout the conference.

Set up and set down

Please put your posters up during the first refreshment break at 10:50 on Thursday 11 April and take them down by the end of the conference. Any poster not removed by the end of the conference will be recycled.

Poster boards are 2m by 1m (h x w) and orientated vertically. Posters should be A0 in size (118.9 x 84.1cm/ 46.8 x 33.1 inches), in a portrait format. Posters must be prepared in advance of the conference as it will not be possible to print them on-site. Fixing material will be supplied to mount your poster.

Safety and evacuation procedures

No fire alarms/drills are planned, if the alarm sounds, please evacuate the building immediately and assemble outside the front of the building on the opposite side of the road (all fire exits are sign posted). DO NOT re-enter the building until instructed it is safe to do so by the fire officer in charge.

All lifts will be grounded upon the alarm sounding. Should you need additional assistance to vacate the building in an emergency or evacuation, please make this known to the organiser upon arrival.

Smoking

In accordance with government legislation, smoking is not permitted in any building, temporary enclosed structure or substantially enclosed space outside of the building. E-cigarettes are also not permitted in the building.

First aid

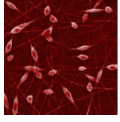
If you fall ill or injure yourself during the conference, please report the incident to a member of staff who will call a trained first-aider. In case of serious injury, paramedics will be called.

Weather

The weather in the UK can be unpredictable and therefore we recommend participants bring a water proof rain jacket and/or umbrella. The average temperature for Manchester, UK in April is 12°C.

General information

- Britain's currency is the pound sterling (£). Credit cards - especially Visa and MasterCard - are widely accepted in restaurants, bars, cafés and shops. American Express and Diners Club cards are less commonly accepted. There are plenty of cash machines (also known as cashpoints or ATMs) available within walking distance of the hotel.
- Value-added tax (VAT) is a 20% sales tax levied on most goods and services except basic food items, books and children's clothing. Restaurants must, by law, include VAT in their menu prices. If you are travelling for leisure or business purposes, you may be eligible for a



Dielectrics 2019

VAT refund. The VAT refund scheme is called the Retail Export Scheme or Tax-Free Shopping.

- Electricity – British electrical standards are 50Hz 230 volts, so some North American and European electrical devices may require converters; all require plug adapters.
- Telephone - If you're visiting the UK from abroad, the UK dialling code is +44 (which replace the 0).
- Emergencies - Visitors should be aware of their personal safety. Call 999 for the emergency services (police, fire and ambulance) which is a free call from any phone. You can also call 112 for non-life threatening assistance and to report crimes. To report non-urgent crime, call the police on 101 from within the UK.

Visitor information

Information on local attractions, tours and events in the city can be obtained from the Manchester Visitor Information Centre or online at www.visitmanchester.com

Manchester Visitor Information Centre

1 Piccadilly Gardens
Manchester M1 1RG

[Googlemaps](#)