

International Conference on Phosphor Thermometry 2020

Please note all times are listed at Central European Summer Time. Slots for presentations are 15 minutes and slots for invited presentations (marked in blue) are 40 minutes. Abstract titles, authors, and the institution of the corresponding author are listed below.

Monday 27th July 2020

7:10 AM - 8:40 AM MATERIALS I: NOVEL TEMPERATURE READOUT CONCEPTS, Chair: Lukasz Marciniak

Synergy between NIR Luminescence and thermal radiation toward highly sensitive NIR operating emissive thermometry	Marciniak, Lukasz; Trejgis, Karolina; Lisiecki, Radoslaw; Bednarkiewicz, Artur	Polish Academy of Science, Wroclaw, Poland
Ag ₂ S nanoheaters with multiparameter sensing for reliable thermal feedback during in vivo tumor therapy	Yingli, Shen; Harrison D. A. Santos; Erving C. Ximendes; Ana Sanz-Portilla; Luis Monge; Nuria Fernandes; Carlos Jacinto; Carlos D. S. Brites; Luis D. Carlos; Antonio Benayas; M. Carmen Iglesias-de la Cruz	Universidad Autonoma de Madrid, Spain
Different Approaches to Single Band Ratiometric Thermometry Based on Tb ³⁺ - the Impact of Thermally Dependent Luminescent Processes on Relative Sensitivity	Drabik, Joanna; Kowalski, Robert; Marciniak, Lukasz	Polish Academy of Science, Wroclaw, Poland
Multimodal Stokes and Anti-Stokes luminescent thermometers based on GdP ₅ O ₁₄ co-doped with Cr ³⁺ and Nd ³⁺ ions	Maciejewska, Kamila; Marciniak, Lukasz	Polish Academy of Science, Wroclaw, Poland
Triple temperature read-out luminescence thermometry at cryogenic temperatures using Cr ³⁺ -activated Mg ₂ SiO ₄	Sekulić, Milica; Antić, Željka; Medić, Mina; Kuzman, Sanja; Veljović, Đorđe; Ristić, Zoran; Mikhail G., Brik; Dramicanin M., Miroslav	Vinca Institute of Nuclear Sciences, Belgrade, Serbia

9:00 AM -10:45 AM MATERIALS II: BIOLOGICAL APPLICATIONS, Chair: Daniel Jaque

NIR-III Luminescence Ratiometric Nanothermometry with Phonon-Tuned Sensitivity	Guanying Chen, Mochen Jia, Zuoling Fu	Harbin Institute of Technology, China
Temperature dependence of the Cr ³⁺ :Mg ₂ TiO ₄ near-infrared emission	Kuzman, Sanja; Medić, Mina; Antić, Željka; Ristić, Zoran; Brik, Mikhail G.; Dramicanin, Miroslav D.	Vinca Institute of Nuclear Sciences, Belgrade, Serbia
Metrology for temperature sensing using Ag ₂ S nanothermometers	Abiven, Lise; Castaing, Victor; Lécuyer, Thomas; Gazeau, Florence; Viana, Bruno; Chanéac, Corinne	Sorbonne Université, France
Thermal decomposition-assisted synthesis of Ho, Tm:KLu(WO ₄) ₂ rods with high light-to-heat conversion efficiency	Nexha, Albenc; Pujol, Maria Cinta; Carvajal, Joan Josep; Diaz, Francesc; Aguilo, Magdalena	University Rovira i Virgili, Spain
Nd ³⁺ doped TZPN glasses for NIR operating single band ratiometric approach of contactless temperature readout	Trejgis, Karolina; Lisiecki, Radoslaw; Bednarkiewicz, Artur; Marciniak, Lukasz	Polish Academy of Sciences Wroclaw, Poland
Tuning of relative thermal sensitivity of mixed Eu-Tb metal-organic framework luminescent thermometers	Serier-Brault, Hélène; Trannoy, Virgile; Carneiro, Albano N.; Carlos, Luis D.	Institut des Matériaux Jean Rouxel, Nantes, France

11:00 AM -12:30 PM ALTERNATIVE LUMINESCENCE-BASED SENSING CONCEPTS, Chair: Frank Beyrau

Use of PMMA and BAM:Eu ²⁺ particles for understanding particle-laden flows	Sun, Zhiwei; Bi, Xiaopeng; Lau, Timothy; Alwahabi, Zeyad; Nathan, Graham	The University of Adelaide, Australia
Lanthanide Luminescence to Mimic Molecular Logic and Computing through Physical Inputs	Brites, Carlos DS; Hernandez-Rodríguez, Miguel A.; Piñol, Rafael; Millán, Angel; Carlos, Luís D.	CICECO - Universidade de Aveiro, Portugal
Thermal History Coatings – an innovative temperature measurement technique	Ferran-Marques, Marta; Araguas-Rodríguez, Silvia; Lee, Kang K.; Karagiannopoulos, Solon; Peral, David; Feist, Joerg Peter; Nicholls, John	Sensor Coating Systems, London, UK
A high-resolution flow velocimetry technique based on decaying streaks from individual phosphor particles	Fan, Luming; Vena, Patrizio; Savard, Bruno; Fond, Benoît	Universität Magdeburg, Germany
Thermal History Paints for Industrial applications	Castillo, Daniel; Araguas-Rodríguez, Silvia; Karagiannopoulos, Solon; Peral, David; Skinner, Stephen; Feist, Joerg Peter	Sensor Coating Systems, London, UK

Monday 27th July 2020, cont'd

1:00 PM - 1:10 PM: INTRODUCTION TO THE CONFERENCE

1:10 PM - 3:10 PM THERMOMETRY IN ENERGY CONVERSION SYSTEMS I, Chair: Steve Allison

Bandshape Luminescence Thermometry for Catalytic Applications	<i>Geitenbeek, Robin</i>	Utrecht University, The Netherlands
Phosphor Thermometry for Nuclear Decommissioning and Storage	<i>Sutton, Gavin</i>	National Physical Laboratory, UK
Revealing Thermal Barrier Coatings Temperature Gradients via Phosphor Thermometry	<i>Fouliard, Quentin ; Vo, Khanh ; Hernandez, Johnathan ; Ghosh, Ranajay ; Raghavan, Seetha</i>	University of Central Florida, USA
Temperature Mapping Above and Below Thermal Barrier Coatings Using Phosphor Thermometry	<i>Eldridge, Jeffrey; Wroblewski, Adam; Wolfe, Douglas</i>	NASA Glenn Research Center, Cleveland, USA

Tuesday 28th July 2020

10:00 AM - 11:30 AM THERMOMETRY IN ENERGY CONVERSION SYSTEMS II: COMBUSTION, Chair: Andrew Heyes

Phosphor-Based Surface Thermometry and Flame Front Imaging in The Crevice of a Fixed-Volume Chamber Operational with Transient Pressure	<i>Ojo Anthony; Escofet-Martin David; Peterson Brian</i>	University of Edinburgh, UK
Phosphor Thermometry for wall temperature measurements in gas turbine combustors	<i>Nau, Patrick; Arndt, Christoph</i>	German Aerospace Center (DLR), Stuttgart, Germany
Temperature measurement at the surface of reacting large-diameter coke particles	<i>Khodsiani, Mohammadhassan; Cai, Tao; Hallak, Bassem; Abram, Christopher; Beyrau, Frank; Specht, Eckehard</i>	University of Magdeburg, Germany
Uncertainty analysis of wall impingement cooling measurements using two-colour phosphor thermometry	<i>Mendieta, Aldo; Beyrau, Frank</i>	University of Magdeburg, Germany
Simultaneous 1D surface temperature and 2D flame front position measurements for flame-wall interaction analysis	<i>Petit, Sylvain; Xavier, Pradip; Vandiel, Alexis; Godard, Gilles; Grisch, Frédéric</i>	CNRS CORIA, Rouen, France

12:00 PM - 1:30 PM NEW METHODS FOR FLUID THERMOMETRY, Chair: Robin Geitenbeek

Simultaneous 2D gas- and particle-phase thermometry with single laser excitation	<i>Lewis, Elliott; Sun, Zhiwei; Lau, Timothy; Alwahabi, Zeyad; Nathan, Graham</i>	University of Adelaide, Australia
Three-dimensional temperature measurements in fluids using thermographic phosphor tracer particles	<i>Stelter, Moritz; Martins, Fabio J. W. A.; Beyrau, Frank; Fond, Benoît</i>	University Magdeburg, Germany
Simultaneous 3D measurement of temperature and velocity in a droplet-based acoustically driven microreactor	<i>Deng, Zhichao; König, Jörg; Cierpka, Christian</i>	Technische Universität Ilmenau, Germany
High-resolution interference-free fluid temperature imaging based on two-dimensional fits of single particle images	<i>Xuan, Guangtao; Abram, Christopher; Beyrau, Frank; Fond, Benoît;</i>	Universität Magdeburg, Germany
A high precision instantaneous dual-frame lifetime fluid temperature imaging technique	<i>Abram, Christopher; Panjikkaran, Irin; Ogugua, Simon Nnalue; Fond, Benoît</i>	Universität Magdeburg, Germany

Tuesday 28th July 2020, cont'd

2:00 PM - 4:00 PM MATERIALS III: FOCUS ON SENSOR DESIGN, Chair: Christopher Abram

How to successfully select and develop materials for luminescence thermometry?	<i>Dramicanin, Miroslav</i>	Vinca Institute of Nuclear Sciences, Belgrade, Serbia
The enhancement of the relative sensitivity of Fe ³⁺ based luminescent thermometers via crystal field strength modification and Cr ³⁺ co-doping in garnet nanocrystals	<i>Kniec, Karolina; Ledwa, Karolina; Maciejewska, Kamila; Marciniak, Lukasz</i>	Polish Academy of Sciences Wroclaw, Poland
Getting the best out of a luminescent thermometer – Thermodynamic and kinetic control of the Boltzmann equilibrium	<i>Suta, Markus; Meijerink, Andries</i>	Utrecht University, The Netherlands
Judd-Ofelt predictions of the ground state absorption luminescence intensity ratio thermometry, validated on Lu ₂ O ₃ :Eu ³⁺	<i>Periša, Jovana; Ćirić, Aleksandar; Medić, Mina; Dramićanin D., Miroslav</i>	Vinca Institute of Nuclear Sciences, Belgrade, Serbia
Step by step designing of sensitive luminescent nanothermometers based on Cr ³⁺ ,Nd ³⁺ co-doped La _{3-x} Lu _x Al _{5-y} Ga _y O ₁₂ nanocrystals	<i>Elzbieciak-Piecka, Karolina; Matuszewska, Celina; Marciniak, Lukasz</i>	Polish Academy of Science Wroclaw, Poland

4:30 PM - 6:15 PM MATERIALS IV, Chair: Hélène Braut

A New Ho ³⁺ -based Thermometer for Sensitive Sensing over a Wide Temperature Range	<i>van Swieten, Thomas; Yu, Dechao; Yu, Ting; Vonk, Sander; Suta, Markus; Zhang, Qinyuan; Meijerink, Andries; Rabouw, Freddy</i>	Utrecht University, The Netherlands
Highly-sensitive luminescence thermometry of Sm ²⁺ doped in Al ₂ O ₃ coatings	<i>Ćirić, Aleksandar; Ristić, Zoran; Antić, Željka; Zeković, Ivana; Stojadinović, Stevan; Brik, Mikhail; Dramićanin, Miroslav</i>	Vinča Institute of Nuclear Sciences, Belgrade, Serbia
Facile and fast synthesis of Er ³⁺ /Yb ³⁺ co-doped fluoride nanoparticles for nanothermometry and multicolor labeling	<i>Sales, Tasso; Upendra, Kumar; Rocha, Uéslen; Jacinto, Carlos</i>	Universidade Federal de Alagoas, Brazil
Luminescence and optical temperature sensing in Sm ³⁺ -doped tellurite glasses	<i>Novatski, Andressa; Andrade, André; Sales, Tasso; Jacinto, Carlos; Silva, Wagner; Antunes, Rosiane; Dias, Daniele; El-Mallawany, Raouf</i>	Universidade Estadual de Ponta Grossa (UEPG), Brazil
Yb ³⁺ /Er ³⁺ -co-doped calcium fluoride (CaF ₂) nanoparticles for nanothermometry under multiphonon assisted anti-stokes excitation	<i>Jefferson F. Silva, Tasso S. de Oliveira, Carlos Jacinto, Uéslen Rocha</i>	Federal University of Alagoas, Brazil
Sr ₄ Al ₁₄ O ₂₅ doped with Mn ⁴⁺ and Tb ³⁺ ions as a highly sensitive thermographic phosphor	<i>Piotrowski, Wojciech; Marciniak, Lukasz</i>	Polish Academy of Science Wroclaw, Poland

Wednesday 29th July 2020

2:00 PM - 4:00 PM BIOLOGICAL APPLICATIONS, Chair: Benoît Fond

Past present and future of in vivo luminescence nanothermometry	<i>Daniel Jaque</i>	Universidad Autonoma de Madrid, Spain
Luminescence thermometry for measuring thermal properties of lipid bilayers	<i>Luís D. Carlos, Ana R. N. Bastos, Carlos D.S. Brites, Paola A. Rojas-Gutiérrez, Rute A.S. Ferreira, Ricardo L. Longo, Christine DeWolf, John A. Capobianco</i>	University of Aveiro, Portugal
Phosphorescence-based Flexible Optical Temperature Sensing Skin: Capable of Extreme Environments	<i>Tao Cai, Yongzhu Yan, Chang-Sik Ha, Kyung Chun Kim</i>	Pusan National University, South Korea
Tissue-induced spectral instabilities of luminescent thermometers operating in NIR-II and NIR-II (causes and consequences)	<i>Shen, Yingli; Lifante, José; Fernandez, Nuria; Jaque, Daniel; Ximendes, Erving</i>	Universidad Autónoma de Madrid, Spain
Nd ³⁺ doped TiO ₂ nanoparticles operating within the biological windows: A study of the influence of its phases on the relative thermal sensitivity	<i>Soares, Wesley; Silva, Anielle; Rocha, Ueslen; Silva, Wagner; Silva, Carlos</i>	Universidade Federal de Alagoas, Brazil

Wednesday 29th July 2020, cont'd

4:30 PM - 6:00 PM THERMOMETRY IN ENERGY CONVERSION SYSTEMS III: FLUID THERMOMETRY, Chair: David Rothamer

Towards low-temperature ignition imaging in engines using the Ce,Pr:CSSO phosphor	<i>Herzog, Joshua M.; Witkowski, Dustin; Rothamer, David A.</i>	University of Wisconsin-Madison, USA
Phosphor thermometry in heat-transfer fluids based on SCASN:Eu	<i>Bollmann, Jonas; Hertle, Ellen; Hickl, Franziska; Will, Stefan; Zigan, Lars</i>	Erlangen Nuremberg University, Germany
Combustion-Relevant Temperature Imaging with Scattering Referenced Aerosol Phosphor Thermometry Applied to Eu:BAM	<i>Herzog, Joshua; Rothamer, David</i>	University of Wisconsin Madison, USA
kHz-rate 2D temperature-velocity measurements using ZnO phosphor particles in gas turbine film cooling flows with mainstream turbulence	<i>Straußwald, Michael; Sander, Tobias; Abram, Christopher; Beyrau, Frank; Pfitzner, Michael</i>	Universität Magdeburg, Germany
Phosphor survivability study of YAG:Pr and SMP:Sn in a premixed flame	<i>Kopf, Andreas; Bardi, Michele; Endres, Torsten; Bruneaux, Gilles; Schulz, Christof;</i>	IFP Energies Nouvelles, Paris, France

6:15 PM - 8:00 PM DEVELOPMENTS IN INSTRUMENTATION, Chair: Gavin Sutton

Upgrading the EMCO LabKit to Measure the Spectral Emission Properties of Phosphors	<i>Miller, John; Hollerman, William; Allison, Stephen</i>	University of Louisiana at Lafayette, USA
PMT Detection System Nonlinearities in Phosphor Thermometry	<i>Feuk, Henrik; Sanned, David; Richter, Mattias; Aldén, Marcus</i>	Combustion Physics, Lund University, Sweden
A study on the use of colour cameras for 2D phosphor thermometry	<i>Fond, Benoît; Melin, Clément; Vegera, Aleksandr; Beyrau, Frank</i>	Universität Magdeburg, Germany
On the Role of Excitation Pulse Duration on Luminescence Measurements	<i>Allison, Stephen</i>	EMCO, USA
Visible Emission Spectra of Thermographic Phosphors under X-ray Excitation	<i>Westphal, Eric; Brown, Alex; Quintana, Enrico; Kastengren, Alan; Son, Steven; Meyer, Terrence; Hoffmeister, Kathryn</i>	Purdue University, USA
ITS-90 calibration of a phosphor-based fibre-optic thermometer from 0 °C to 650 °C	<i>Lowe, David; Sutton, Gavin; Sposito, Alberto; Machin, Graham; Pearce, Jonathon</i>	National Physical Laboratory, Teddington, UK

8:30 PM - 10:15 PM MATERIALS V, Chair: Miroslav Dramicanin

NaTiO ₂ nanoparticles doped with Nd ³⁺ as nanothermometers operating in the biological window	<i>Soares, Wesley; Silva, Anielle; Silva, Wagner; Rocha, Ueslen; Silva, Carlos</i>	Universidade Federal de Alagoas, Brazil
Core/shell engineering of Er ³⁺ /Yb ³⁺ CaF ₂ nanocrystals for luminescent nanothermometer	<i>Soares, Ana; Sales, Tasso; Silva, Jefferson; Rocha, Uéslen; Jacinto, Carlos.</i>	Federal University of Alagoas, Brazil
High-resolution remote thermometry and thermography using luminescent low-dimensional metal-halide perovskites	<i>Yakunin Sergii, Benin Bogdan, Morad Viktoria, Cattaneo Stefano, Kovalenko Maksym</i>	ETH Zurich, Switzerland
Aerosol synthesis of Ce-doped YPO ₄ and GdPO ₄ phosphor particles for temperature sensing in gas flows	<i>Aliyu, Waliyu Abdulkadir; Betke, Ulf; Abram, Christopher</i>	Universität Magdeburg, Germany
Facile and fast synthesis of Er ³⁺ /Yb ³⁺ co-doped fluoride nanoparticles for nanothermometry and multicolor labeling	<i>Sales, Tasso; Upendra, Kumar; Rocha, Uéslen; Jaacinto, Carlos</i>	Universidade Federal de Alagoas, Brazil
Measuring the Temperature-Dependent Bi-Exponential Decay Times for Tetrakis (Dibenzoylmethide) Europium (III) Triethylammonium	<i>Miller, John; Hollerman, William; Karsili, Tolga; Bienvenu, Alyssa; Allison, Stephen</i>	University of Louisiana at Lafayette, USA

10:15 PM - 10:25 PM CONCLUDING REMARKS
