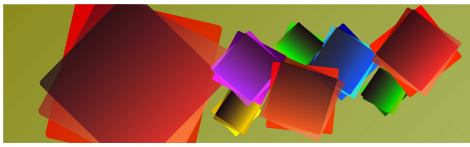

nanoGe Fall Meeting
Online Conference
20th-23rd October, 2020

nanoGe

Online nanoGe Fall Meeting 20 (OnlineNFM20)

#INfraNC20. Infrared Nanocrystals

2020 October 22nd - 23rd

Conference Chairs: Emmanuel Lhuillier, Andrey Rogach and Philippe Guyot-Sionnest

Conference Program

October 22nd - Day 3 (Thursday)	
08:30 - 08:35	**INfraNC Openning nanoGe**
08:35 - 08:45	**INfraNC Session Introduction 1.1 - Emmanuel Lhuillier**
	INfraNC 1.1 Chair: Emmanuel Lhuillier
08:45 - 09:05 1.1-I1	Kwang Seob Jeong *(Korea University, Department of Chemistry, College of Science)* Mid-wavelength Infrared Emission of Colloidal Metal Chalcogenide and Chalcogen Nanocrystals
09:05 - 09:25 1.1-I2	Stephen Kershaw *(MSE Dept & Centre for Functional Photonics City University of Hong Kong Tat Chee Avenue Kowloon Hong Kong SAR)*, Andrey Rogach Near Infrared to Short Wavelength Infrared Emitting HgTe Quantum Dot Synthesis and Optical Devices based upon them
09:25 - 09:45 1.1-I3	Vanessa Wood *(ETH Zurich, Department of Information Technology and Electrical Engineering)* Transport in Semiconductors of PbS Quantum Dots
09:45 - 10:05	Discussion
	INfraNC 1.2 Chair: Emmanuel Lhuillier
10:05 - 10:15 1.2-T1	Matthias J. Grotevent *(Empa – Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Transport at Nanoscale Interfaces, Dübendorf, Switzerland)*, Claudio U. Hail, Sergii Yakunin, Dominik Bachmann, Michel Calame, Dimos Poulikakos, Maksym V. Kovalenko, Ivan Shorubalko Colloidal HgTe Quantum Dot/Graphene Phototransistor with a Spectral Sensitivity Beyond 3 µm
10:15 - 10:25 1.2-T2	Charlie Gréboval *(Sorbonne Université, CNRS, Institut des NanoSciences de Paris, INSP, France)*, Audrey Chu, Ulrich Noumbé, Jean-François Dayen, Emmanuel Lhuillier Ionic glasses and ferroelectric materials as new strategies to tune the carrier density in narrow bandgap nanocrystal arrays
10:25 - 10:35 1.2-T3	Weyde M.M. Lin *(Swiss Federal Institute of Technology ETH Zurich)*, Nuri Yazdani, Olesya Yarema, Sebastian Volk, Maksym Yarema, Thomas Kirchartz, Vanessa Wood Using Device-level Simulation as a Tool for Understanding the Operation of Nanocrystal-based Solar Cells
10:35 - 10:45	
10:45 - 11:15	Discussion
11:15 - 12:00	**INfraNC Break**
12:00 - 12:05	**INfraNC Introduction nanoGe**
	INfraNC 1.3 Chair: Emmanuel Lhuillier
12:05 - 12:15 1.3-T1	Aloyse Degiron *(Université de Paris and CNRS)* Endowing light emission from near-infrared nanocrystals with orbital angular momentum and vectorial polarization states

12:15 - 12:25 1.3-T2	Audrey Chu *(Sorbonne Université, CNRS, Institut des NanoSciences de Paris, INSP, France)*, Charlie Gréboval, Grégory Vincent, Emmanuel Lhuillier Shaping of the Spectral Response in Infrared Nanocrystal-Based Detectors using Light-Matter Coupling
12:25 - 12:35 1.3-T3	Christopher Melnychuk *(James Frank Institute, University of Chicago, USA)*, Philippe Guyot-Sionnest Mid-infrared Electron Dynamics in Mercury Chalcogenide Nanocrystals
12:35 - 12:45 1.3-T4	Ananth Kamath *(James Frank Institute, University of Chicago, USA)*, Christopher Melnychuk, Philippe Guyot-Sionnest Bright Mid-Infrared Photoluminescence in Giant HgSe/CdS Quantum Dots
12:45 - 13:15	Discussion
13:15 - 13:20	**INfraNC Short Break**
13:20 - 13:30	**INfraNC Session Introduction 1.4 - Philippe Guyot-Sionnest**
	INfraNC 1.4 Chair: Philippe Guyot-Sionnest
13:30 - 13:50 1.4-I1	Ethan Klem *(SWIR Vision Systems)* SWIR and Extended SWIR High Definition Imaging Using PbS Colloidal Quantum Dot Photodiode Arrays
13:50 - 14:10 1.4-I2	Delia Milliron *(McKetta Department of Chemical Engineering, University of Texas at Austin)* Electronic and Optical Impact of Dopant Distribution in Plasmonic Metal Oxide Nanocrystals
14:10 - 14:30 1.4-I3	Matthew Beard *(Chemical and Nanoscale Sciences Center, National Renewable Energy Laboratory)* Using QD/Ligand interactions to n- and p- dope PbS QDs and ligand-ligand interactions to build Janus-ligand shells
14:30 - 14:50	Discussion
15:00 - 16:30	**ePoster Session**

October 23rd - Day 4 (Friday)	
09:30 - 09:35	**INfraNC Introduction nanoGe**
09:35 - 09:45	**INfraNC Session Introduction 2.1**
	INfraNC 2.1 Chair: Andrey Rogach
09:45 - 10:05 2.1-I1	Gerasimos Konstantatos *(ICFO-Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology)* Colloidal Quantum Dots: A platform for SWIR Light Emitters
10:05 - 10:25 2.1-I2	Wolfgang Heiss *(Friedrich-Alexander-Universität Erlangen-Nürnberg, Institute Materials for Electronics and Energy Technology, Department of Materials Science and Engineering, Energy Campus Nürnberg)*, Niall Killilea, Mykhailo Sytnyk PbS nanocrystal growth and overgrowth by thiourea precursors
10:25 - 10:45 2.1-I3	Zeger Hens *(Gent University - BE)* TBC
10:45 - 11:05	Discussion
11:05 - 11:10	**INfraNC Closing**

Poster Contribution

234	Yunhua Xing *(ETH Zurich, Materials and Device Engineering Group, D-ITET)*, Nuri Yazdani, Weyde Lin, Vanessa Wood Effect of Positional Disorder ion Charge Transport in Nanocrystal Thin Films
245	Gahyeon Kim *(Korea University, Department of Chemistry, College of Science)*, Dongsun Choi, Kwang Seob Jeong Promising Materials for Strong Mid-IR Light Source: The Tellurium Elemental Solid and Microcrystals
246	Sébastien Sauvage *(C2N, Centre de Nanosciences et de Nanotechnologies, CNRS, University Paris-Saclay)*, Guy Fishman, Nicolas Moghaddam, Charlie Gréboval, Junling Qu, Audrey Chu, Prachi Rastogi, Clément Livache, Adrien Khalili, Xiang Zhen Xu, Benoit Baptiste, Stefan Klotz, Francesco Capitani, Sandrine Ithurria, Emmanuel Lhuillier Theoretical Analysis of the Strong Confinement in HgTe Nanostructures Using a 14-band k.p Formalism
247	Dongsun Choi *(Korea University, Department of Chemistry, College of Science)*, Juhee Son, Mihyeon Park, Juyeon Jeong, Bitna Yoon, Kwang Seob Jeong Mid Wavelength Infrared Electronic Transition in Self-Doped Nanocrystals and Correlation of Physical Property