

KSOP-QMat Summer School 2020

Enjoy with us the fascinating world of Optics & Photonics! Two days of discussions, lectures and networking on the latest research topics in Optics and Photonics.



In 2020 the KSOP-QMat Summer School will once again bring young scientists from around the world together in a new online format to dive into fascinating recent advancements in the field of Optics & Photonics. This year, the summer school will be jointly organized by KIT and University of Strasbourg for the KSOP-QMat Summer School 2020.

Internationally renowned experts as well as KSOP scientists will discuss the hot topics of Optics & Photonics and give insights into their research in regard to the five Research Areas of KSOP (http://www.ksop.kit.edu/research_areas.php).

We are looking forward to fascinating speeches, extended master classes with experts from academia and industry, alumni talks, vivid discussions, networking opportunities, and poster sessions by the PhD students!

Date: September 03-04, 2020.

Location: Online Summer School

Participation fee: The price for external guests is 40 EUR.



Find out more about the topics, fascinating speeches, and extended master classes in the agenda.

[DOWNLOAD HERE \(/KSOP-SUMMER-SCHOOL-2020-AGENDA.PHP\)](#)

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Thank you to all that registered. Registration is now closed.

Registration for Non-Members

Thank you to all that registered. Registration is now closed.



The following speakers have confirmed their participation

Portrait	Presenter	Institution	Talk
	Prof. Dr. Alexander Szameit	University of Rostock	Talk: Topological Photonics (/downloads/weiteres/Szameit-Abstract-1.pdf) Master class: Special topics in Topological Photonics: Disorder, non-Hermiticity, and non-linearity (/downloads/weiteres/Abstract_Masterclass-Alexander-Szameit.pdf)
	Prof. Dr. Andrew Forbes	University of Witwatersrand	Talk: Structured light from lasers (/downloads/weiteres/Forbes-Abstract.pdf) Master class: Is there such a thing as Classically Entangled light? (/downloads/weiteres/Abstract_masterclass_Andrew-Forbes.pdf)
	Prof. Dr. Aurélien Bruyant	Université de Technologie de Troyes	Talk: Interferometric detection for nanoptics and bio-sensing (/downloads/weiteres/Abstract_Talk-Aurelien-Bruyant.pdf) Master class: Biosensing through ellipsometric Surface Plasmon Resonance (/downloads/weiteres/Abstract_Master%20class-Aurelien-Bruyant.pdf)
	Dr. Claudia Hössbacher	Polariton Technologies Ltd.	Commercializing Science - How I Turned from Lab to Business Experiments (/downloads/weiteres/Abstract_Talk-Claudia-Hoessbacher.pdf)
	Prof. Dr. Hamid Dehghani	University of Birmingham	Talk: Adventures in Diffuse Optical Imaging (/downloads/weiteres/Talk_abstract-Hamid-Dehghani.pdf) Master class: Computational algorithms in spatial recovery of functional maps in Near Infrared spectroscopic imaging (/downloads/weiteres/Master%20class_abstract-Hamid-Dehghani.pdf)
	Dr.-Ing. Miriam Schreiber	Automated Driving: Multimodal perception and sensor systems (CR/AEV4) Robert Bosch GmbH	Talk: Environmental Perception for Autonomous Vehicle: Classic and Deep-Learning based Methods (/downloads/weiteres/Abstract-Miriam-Schreiber.pdf) Master class: Restricted Automated Driving (/downloads/weiteres/Abstract_Masterclass-Miriam-Schreiber.pdf)
	Prof. Dr. Thomas	Forschungszentrum	Talk: Solution processable photovoltaics





Kirchartz

Julich GmbH

(/downloads/weiteres/Abstract_KSOP'20'20.pdf)

Master class: Charge carrier recombination in lead-halide perovskites (/downloads/weiteres/Abstract_KSOP2020.pdf)



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(/Become_a_KSOP_Ambassadors_denica.php)

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Agenda KSOP-QMat Summer School 2020

Thursday, September 3

Time	Speaker	Talk	Institution
8:00 - 8:40		Registration & Coffee Welcome	
8:45 - 9:00		Welcome	KIT
9:00 - 10:00	Prof. Dr. Alexander Szameit	Topological Photonics	University of Rostock
10:05 - 11:05	Prof. Dr. Andrew Forbes	Structured Light from Lasers	University of Witwatersrand
11:05 - 11:25		Coffee Break & Active Break	
11:25 - 12:10	Prof. Dr. Alexander Szameit	Master Class: Special topics in Topological Photonics: Disorder, non-Hermiticity, and non-linearity	University of Rostock
11:25 - 12:10	Prof. Dr. Andrew Forbes	Master Class: Is there such a thing as Classically Entangled light?	University of Witwatersrand
12:10 - 13:00		Lunch	
13:00 - 13:45		Poster Session Photonic Materials & Devices Quantum Optics & Spectroscopy	
13:45 - 14:45	Prof. Dr. Hamid Dehghani	Adventures in Diffuse Optical Imaging	University of Birmingham
14:50 - 15:50	Dr. Miriam Schreiber	Environmental Perception for Autonomous Vehicle: Classic and Deep-Learning Based Methods	Robert Bosch GmbH
15:50 - 16:10		Coffee Break & Active Break	
16:10 - 17:00		Poster Session Biomedical Photonics Optical Systems	
17:00 - 17:45	Prof. Dr. Hamid Dehghani	Master Class: Computational Algorithms in Spatial Recovery of Functional Maps in Near Infrared Spectroscopic Imaging	University of Birmingham
17:00 - 17:45	Dr. Miriam Schreiber	Master Class: Restricted Automated Driving	Robert Bosch GmbH
19:00 - Open end		Socializing & Fun	

Speakers



Prof. Dr. Alexander Szameit



Prof. Dr. Andrew Forbes



Prof. Dr. Hamid Dehghani



Dr. Miriam Schreiber

Friday, September 4

Time	Speaker	Talk	Institution
8:30 - 9:00		Log-In & Coffee	
9:00 - 10:00	Prof. Dr. Thomas Kirchartz	Solution Processable Photovoltaics	Forschungszentrum Jülich GmbH Institut für Energie- und Klimaforschung
10:05 - 11:05	Dr. Aurélien Bruyant	Interferometric Detection for Nanoptics and Bio-Sensing	Université de Technologie de Troyes
11:05 - 11:25		Coffee Break & Active Break	
11:25 - 12:25	Dr. Claudia Hössbacher	Alumni Talk: Commercializing Science - How I Turned from Lab to Business Experiments	Polariton Technologies Ltd.
12:25 - 13:15		Lunch	
13:15 - 14:00		Poster Session Solar Energy	
14:00 - 14:45	Prof. Dr. Thomas Kirchartz	Master Class: Charge Carrier Recombination in Lead-Halide Perovskites	Forschungszentrum Jülich GmbH Institut für Energie- und Klimaforschung
14:00 - 14:45	Dr. Aurélien Bruyant	Master Class: Biosensing through Ellipsometric Surface Plasmon Resonance	Université de Technologie de Troyes
14:45 - 15:05		Voting for Best Poster Award & Best Master Class	
15:15 - 15:30		Awards & Farewell	



Prof. Dr. Thomas Kirchartz



Dr. Aurélien Bruyant



Dr. Claudia Hössbacher

Synthesis of high plqy and good stability silicon nanocrystal functionalized using microwave-assisted hydrosilylation

Deski Beri ^a, Dmitry Busko ^a Bryce S. Richards ^{a, b}, Andrey Turhatov ^a.

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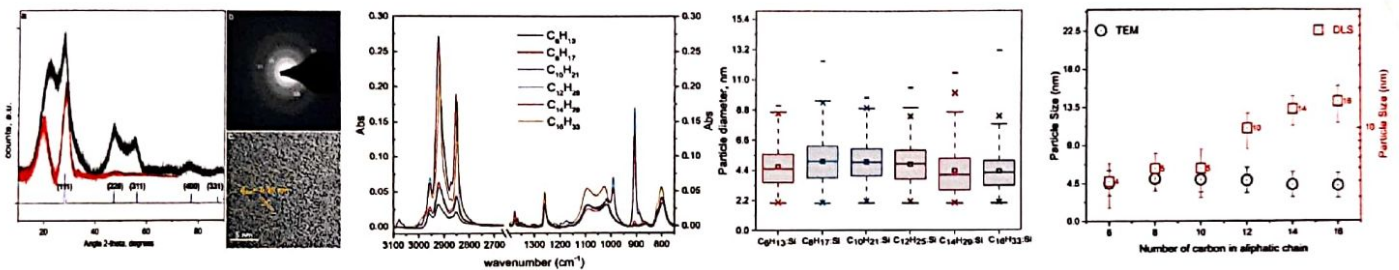
Motivation

- Silicon nanocrystals have potential applications in solar cell, optoelectronics, photonics, and due to non-toxicity and degradability properties, they can be used in biomedicine for photodynamic therapy of cancer.
- Microwave assisted-hydrosilylation can be used to produce various capped silicon nanocrystals with promising PLQY and stable for quite sometime.
- By controlling particle size, it is possible to study the effect of hydrocarbon capping to the luminescent properties of silicon nanocrystals.

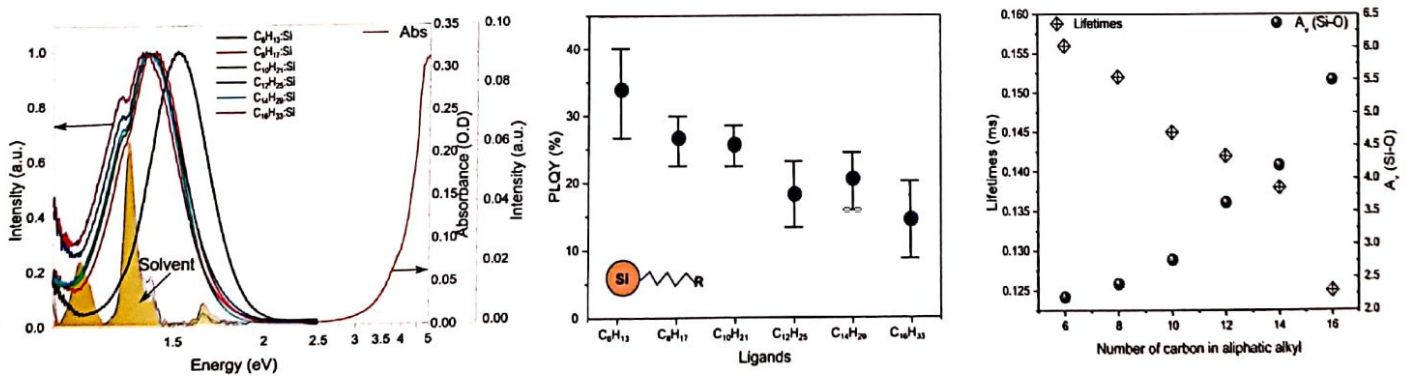


Result

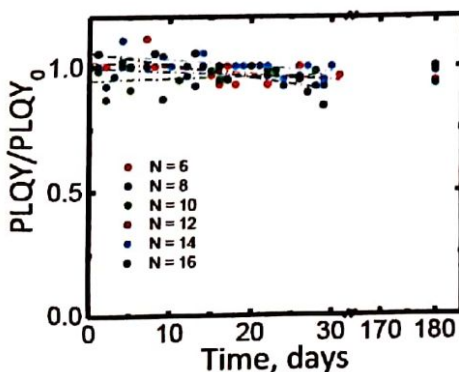
□ Characterization



□ Characterization



□ Stability

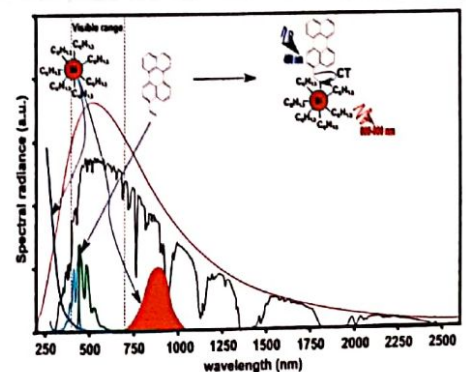


Outlook

- Dye functionalized SiNC
- Charge /exciton transfer from dye molecule into Si core
- Possible application in solar cell

References

1. Sun, W., et. al, (2016), *Nanoscale*, 8, 3678-3684.,
2. Ozin, G. et.al. (2015), *Small* 11, 335-340.



Dr. Deski Beri
participated successfully in the
Ph.D. Program in Optics & Photonics
at the Karlsruhe School of Optics & Photonics (KSOP)

from February 2015 to December 2020
in Research Area 'Solar Energy'

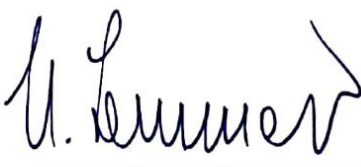
Part of the KSOP Ph.D. Program in Optics & Photonics is a specific modular training program which includes management, technical, scientific as well as key competence modules.

Dr. Deski Beri participated in the following modules:

Scientific Modules: Karlsruhe Days of Optics & Photonics (KDOP) 2017 | November 7, 2017
KSOP - QMat Summer School 2020 | September 3 - 4, 2020

Key Competence Modules: Scientific Writing and Presentation | May 10 - 17, 2016

Karlsruhe, August 2021



Prof. Dr. Uli Lemmer, KSOP Coordinator



Dr.-Ing. Judith Elsner, KSOP Managing Director

The Graduate School 'Karlsruhe School of Optics & Photonics' (KSOP) was founded within the scope of the German Excellence Initiative. Physicists, chemists, biologists, mechanical and electrical engineers contribute in a multidisciplinary approach to the educational concept covering the five Research Areas: Photonic Materials & Devices, Quantum Optics & Spectroscopy, Biomedical Photonics, Optical Systems, and Solar Energy. KSOP Ph.D. students are embedded in an excellent research environment in the Karlsruhe Institute of Technology (KIT) which bundles the research and education strengths of the former Universität Karlsruhe (TH) and the Forschungszentrum Karlsruhe together with strong partners such as the Research Centre for Information Technologies in Karlsruhe (FZI) and the Stuttgart-based Centre for Solar Energy and Hydrogen Research (ZSW).

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