Gerasimos Konstantatos, Dipl. Ing, M.A.Sc., Ph.D
Date of Birth: 09/03/1979
Group Leader – ICREA Professor
Functional Optoelectronic Nanomaterials
ICFO - Institute of Photonic Sciences,
Av. Carl Friedrich Gauss 3, Castelldelfels,
Barcelona, Spain 08860
Tel. (Mob) +34653180137
Email: gerasimos.konstantatos@icfo.eu
Web: https://www.icfo.eu/research-group/17/sp-nanophotonic-devices/home/437/
ORCID : orcid.org/0000-0001-7701-8127

POSITION(s):

2015 – Present: Group Leader (professor with tenure) at ICFO (www.icfo.eu)
: ICREA Research Professor (www.icrea.cat)

September 2009 - 2014: Group Leader – Assistant Professor at the Institute of Photonic Sciences (ICFO)

- *Selected Cellex NEST fellow in 2009 to start a tenure track Group Leader position at ICFO (a highly selective process with <1% applicants selected).*

September 2008 – July 2009: Postdoctoral fellow in the department of Electrical and Computer Engineering at the University of Toronto, Canada.

EDUCATION:

October 2004 - July 2008: Ph.D. in the department of Electrical and Computer Engineering at the University of Toronto, Canada. Thesis Title: "Sensitive Solution-processed Quantum Dot Photodetectors". Ph. D. Supervisor: Edward H. Sargent.

September 2002- September 2004: M.A.Sc. in the department of Electrical and Computer Engineering at the University of Toronto, Canada. Thesis Title: "Solution-processed Infrared Light Emitting Diodes: Origins and Optimization of Quantum Efficiency".

September 1996- September 2001: Diploma in Electrical and Computer Engineering from the University of Patras, Greece. Thesis Title: "Analysis and Design of Printed Microstrip Antennas".

FELLOWSHIPS & AWARDS

- **ICREA Professor** (since 2015)
- **Fresnel Prize 2013** for salient contributions in the field of colloidal quantum dot optoelectronics.
- **TR35-SPAIN MIT Technology Review Award 2012**.
- **Ramon y Cajal Fellow** (2012-2016, ranked 1st nationwide in the technology category).
- **Marie Curie Career Re-integration Grant, EU-FP7, 2010.**
- **Connaught Fellow** (2004-2008) (highly prestigious, competitive fellowship for Ph.D. students).
- Ontario Graduate Scholarship (2002-2004).
- **Ericsson Award** of Excellence in Telecommunications, **2001**.

NOTABLE ACHIEVEMENTS

- **ERC Consolidator Grant Awardee in 2016 and 2020.**
- **ERC Proof of Concept grant Award 2018 and 2021.**
- **Scientific Coordinator of NANOMATCELL (2012-2015) and 2DNEURALVISION** (2023-2026) EU Projects.
- **Received more than 11M€ of funding from competitive calls** (European, National and Industrial projects) in the period 2009-2023.
- **Co-Founder and BoD Member of Qurv Technologies, a spin-off from ICFO.**
- **Inventor of 15 granted patent families and 10 more patent applications.**
- **Scientific Yield: 120 refereed Journal Publications in Q1/D1 (in >90 as a leading corresponding author), >26,800 citations, h-index: 62 (Google Scholar),** ***20*** articles published in ***Nature/Science family*** Journals (***1xNature, 7xNature Photonics, 1xNature Materials, 4xNature Nanotechnology, 5xNature Comm., 1xNature Energy, 1 Science Advances),*** *>13x Advanced Materials, 4x ACS Nano, 6x Nanoletters, 1x Light: Science and applications.*

His work has received broad media coverage including national and international media **(The Economist, Financial Times, Wall St. Journal, El Mundo, El Pais, La Vanguardia, CNN/GR, To Vima, Kathimerini etc.)** as well as in more technical media (Optics and Photonics News, IEEE spectrum, Physics World, NanotechWeb, Science Daily, Phys.org, Photonics.com, Laser Focus World etc.)

SUPERVISION AND MENTORING

- The PI currently supervises 5 Ph.D. students and 12 post-doctoral fellows.
- The PI has successfully supervised **8 Ph.D. students** who have then taken positions in industry and academia: Dr. L.Martinez, Dr. P. Garcia de Arquer: Dr. D. Kufer, Dr. D. So, Dr. I. Nikitskiy, Dr. Yongjie Wang, Dr. Nima Taghipour.
- The PI has supervised 8 **Marie-Curie Fellows** (IIF and IEF): Dr. S. Diedenhofen, Dr. F. Beck, Dr. O. Vazquez Mena, Dr. N. Cates Miller, Dr. F. DiStasio, Dr. S. Christodoulou, Dr. Z. Wang, Dr. Lucheng Peng.
- **13 researchers who completed their phd or postdoctoral studies at the group of the PI have moved to independent research/faculty member careers**:

F. Beck - group leader at ANU Australia / A. Mihi (ERC Starting Grant) - ICMAB-CSIC Barcelona / A. K. Rath - National Chemical Laboratory India / Oscar Vazquez-Mena –UC San Diego, USA / M. Bernechea –INA/University of Zaragoza / J.Wang – ShanDong University, China / F. Di Stasio (ERC Starting Grant)– IIT, Genoa, Italy / N. Huo – South China Normal University, China / S. Christodoulou – Chemistry Dept of University of Cyprus. / P. Garcia de Arquer – ICFO (NEST Fellow, ERC Starting Grant) / S. Pradhan – IIT, Roorkee, India / Z. Wang –Beijing Institute of Technology, China / Hyun-Soo Ra – Seoul National University.

COMMISSIONS OF TRUST:

- **Regular reviewer for:** Nature, Science, Nature Nanotechnology, Nature Materials, Nature Photonics, Nature Communications, Advanced Materials, Advanced Energy Materials, Advanced Optical Materials, Advanced Functional Materials, Small, Nanoletters, ACS Nano, ACS Photonics, JACS, JPCC, JPCL, Applied Physics Letters, Energy and Environmental Science, Nanoscale, Physical Chemistry Chemical Physics, etc.
- **Member of Editorial Advisory Board:** Advanced Optical Materials (Wiley), 2020 - present.

- **Proposal Evaluator for:** ERC (Starting Grant, Consolidator and Advanced Grant), H2020 (Marie Curie, FET), Dutch Funding Agency for applied science (Tech. Foundation STW), German Science Foundation (DFG), Belgian FWO, Singapore´s SERC, SWISS science Foundation.
- **Member of the scientific advisory board** for INN (Institute of Nanoscience and Nanotechnology) of NCSR Demokritos, Athens, Greece.

INSTITUTIONAL RESPONSIBILITIES

- PhD Committee Member at ICFO (2018-present).
- Committee Evaluation Member for selection of Postdoc and PhD MC-COFUND Fellows at ICFO (2016 – Present).
- Selection Committee Member for new faculty hirings at ICFO (2016 – Present).
- Chair of Nanocharacterization Lab (NCL) Facility of ICFO (2023-present)

ORGANISATION OF SCIENTIFIC MEETINGS

- 2015: Co-chair and scientific organizer of the SPINS15 conference (http://www.nanoge.org/SPINS15/) with more than 190 participants.
- 2019: Organizer of ICFO Summer School on Nanophotonics and Nanomaterials for Solar Harvesting Applications (> 100 participants).

KEY SCIENTIFIC ACHIEVEMENTS

SELECTED JOURNAL PUBLICATIONS

20 important (Nature Family Group) Publications – Full publication list is provided at the end of this document

Pre-ICFO (as a graduate student), 2004-2009:

1. G. Konstantatos, E. H. Sargent, "Light Sensing using Nanostructured Materials", ***Nature Nanotechnology,*** **5**, 391–400, 2010.
2. J. Clifford, **G. Konstantatos,** S. Hoogland, L. Levina, E. Sargent, "Fast, Sensitive, Spectrally-Tunable Solution-Processed Photodiodes", ***Nature Nanotechnology,*** **4**, 40-44, 2009.
3. G. Konstantatos, J. Clifford, L. Levina, E. H. Sargent, "Sensitive Solution-processed Visible-Wavelength Photodetectors"**,** ***Nature Photonics,*** **1**, 531-534, 2007.
4. G. Konstantatos, I. Howard, A. Fischer, S. Hoogland, J. Clifford, E.J. D. Klem, L. Levina, E. H. Sargent, "Ultrasensitive solution-cast quantum dot photodetectors", ***Nature,*** **442**, 180-183, 2006. **Highlighted in Financial Times, Wall St. Journal, CBC news etc.**.
5. S. A. McDonald, **G. Konstantatos**, S. Zhang, P. W. Cyr, E. J. D. Klem, L. Levina, E. H. Sargent, "Solution-processed PbS quantum dot infrared photodetectors and photovoltaics", ***Nature Materials,*** **4,** 138-142, 2005.

ICFO-based (as a corresponding lead author), 2009 - present:

1.Silver telluride colloidal quantum dot infrared photodetectors and image sensors, Y. Wang, L. Peng, J. Schreier, Y. Bi, A. Black, A. Malla, S. Goossens, G. Konstantatos **Nature Photon.** [Online DOI: 10.1038/s41566-023-01345-3] (2024).

2. **Cation disorder engineering yields $AgBiS_2$ nanocrystals with enhanced optical absorption for efficient ultrathin solar cells,** Y. Wang, S. R. Kavanagh, I.Burgués-Ceballos, A. Walsh, D. Scanlon, G.Konstantatos, **Nature Photon**. **16**, 235-241 (2022).
3. **Solution-processed PbS quantum dot infrared laser with room-temperature tunable emission in the optical telecommunications window,** G. L. Whitworth, M. Dalmases, N. Taghipour, G. Konstantatos, **Nature Photon. 15**, 738-742 (2021).
4. **High efficiency infrared colloidal quantum dot light emitting diodes based via engineering at the supra-nanocrystalline level** S. Pradhan, F. DiStasio, Y. Bi, S. Gupta, S. Christodoulou, A. Stavrinadis, G. Konstantatos **Nature Nanotechnology**, **14**, 72-79 (2019).
5. **Flexible graphene photodetectors for wearable fitness monitoring,** E. O. Polat, et al., **Sci. Adv**. **5**, eaaw7846 (2019).
6. **Current status and technological prospect of photodetectors based on two-dimensional materials** G. Konstantatos **Nature Commun**. **9**, 5266 (2018).
7. **Broadband image sensor array based on graphene–CMOS integration** S. Goossens, G. Navickaite, C. Monasterio, S. Gupta, J. J. Piqueras, R. Pérez, G. Burwell, I. Nikitskiy, T. Lasanta, T. Galán, E. Puma, A. Centeno, A. Pesquera, A. Zurutuza, G. Konstantatos*, F. Koppens* **Nature Photon**. **11**, 366-371 (2017), *corresponding authors, highlighted in La Vanguardia, El Mundo, ABC, CNN Greece etc.
8. **Ultrasensitive all-2D MoS_2 phototransistors enabled by an out-of-plane MoS_2 PN homojunction** N. Huo, G. Konstantatos **Nature Commun**. **8**, 572 (2017).
9. **Integrating an electrically active colloidal quantum dot photodiode with a graphene phototransistor** I. Nikitskiy, S. Goossens, D. Kufer, T. Lasanta, G. Navickaite, F. H. L. Koppens, G. Konstantatos **Nature Commun**. **7**, 11954 (2016).
10. **Solution-processed solar cells based on environmentally friendly AgBiS2 nanocrystals** M. Bernechea, N. Cates Miller, G. Xercavins, D. So, A. Stavrinadis, G. Konstantatos **Nature Photon**. **10**, 521-525 (2016). **Highlighted in El Pais, El Mundo, La Vanguardia etc.**
11. **The role of surface passivation for efficient and photostable PbS quantum dot solar cells** Y. Cao, A. Stavrinadis, T. Lasanta, D. So, G. Konstantatos **Nature Energ**. **1**, 16035 (2016).
12. **Integrated colloidal quantum dot photodetectors with color-tunable plasmonic nanofocusing lenses,** S. L. Diedenhofen, D. Kufer, T. Lasanta, G. Konstantatos, **NPG: Light-Sci. Appl. 4**, e234 (2015).
13. **Heterovalent cation substitutional doping for quantum dot homojunction solar cells** A. Stavrinadis, A. K. Rath, F. P. García de Arquer, S. L. Diedenhofen, C. Magén, L. Martinez, D. So, G. Konstantatos **Nature Commun. 4**, 2981 (2013).
14. **Solution-processed inorganic bulk nano-heterojunctions and their application to solar cells** A. K. Rath, M. Bernechea, L. Martinez, F. P. Garcia de Arquer, J. Osmond, G. Konstantatos **Nature Photon. 6**, 529-534 (2012).
15. **Hybrid graphene–quantum dot phototransistors with ultrahigh gain** G. Konstantatos*, M. Badioli, L. Gaudreau, J. Osmond, M. Bernechea, F. P. Garcia de Arquer, F. Gatti, F. H. L. Koppens* **Nature Nanotechnol. 7**, 363-368 (2012). **Highlighted in The Economist, La Vanguardia, ToVima Science etc.**

INVITED TALKS IN CONFERENCES (selected from over 50 invited talks and seminars given at national and international conferences, workshops and Universities):

- ❖ NanoBioConf, Heraklion Crete, Sept 11-15 2023, Greece
- ❖ MRS Fall 2022 Nov 30 – Dec 5, 2022, Boston, US

❖ E-MRS Spring 2019, May 27 to 31, 2019, Nice France
❖ HOPV 2018, May 28/31, 2018, Benidorm, Spain.
❖ MRS Fall 2017, Nov 30 – Dec 5, 2017, Boston, US
❖ Graphene Week 2017, Athens, Greece, Sept24-29, Plenary Talk
❖ KAUST conference on Functional Nanomaterials and Devices, March 2015, KAUST, Saudi Arabia.
❖ NANOTEXNOLOGY 2015, Thessaloniki, Greece, July 2015.
❖ MRS Fall 2014, November 30 - December 5, 2014, Boston.
❖ International Conference Solution processed Semiconductor Solar Cells, SSSC14, 2014, Oxford.
❖ Nanoscience with Nanocrystals, NANAX6, May 16-23 2014, Bad Hofgastein, Austria.
❖ Bayern-Innovative, Next generation of Solar Cells, Erlangen, December 2013.
❖ 4th International Conf. from nanomaterials to nanosystems and devices, IC4N, Corfu Greece, 2013.
❖ 3rd international conference on semiconductor sensitized and quantum dot solar cells, Granada, 2013.
❖ 16th European Conference on Integrated Optics, Sitges, Spain, April 18-20, 2012.
❖ E-MRS Fall 2012, Warsaw Poland, Sept. 18-22, 2012.

COMMERCIALIZATION & TECHNOLOGY DEVELOPMENT & TRANSFER ACHIEVEMENTS

- My Research work at University of Toronto led to 5 patent families and the **creation of a spin-off, Invisage Technologies**, whose mission has been to revolutionize the image sensor market. **Invisage has received multiple tech-awards and over 100M$ in funding. Invisage was then bought-up by Apple Inc.**
- At ICFO in July 2021, **I co-founded a spin-off**, called Qurv Technologies, for which I act as a **member of the board of directors** and **scientific advisor**. Qurv's mission is to revolutionize machine vision enabled by scalable and low-cost image sensor technologies based on quantum and nanoscale materials (quantum dots and 2D materials).

FULL PUBLICATION LIST

BOOKS:

1) **Colloidal quantum dot optoelectronics and photovoltaics**, **Cambridge University Press (2013)**, **G. Konstantatos**, E. H. Sargent (editors).

PUBLICATIONS

@ ICFO (**selection** of peer-reviewed Journal Publications at ICFO **as a corresponding author**):

1. **Silver telluride colloidal quantum dot infrared photodetectors and image sensors,** Y. Wang, L. Peng, J. Schreier, Y. Bi, A. Black, A. Malla, S. Goossens, G. Konstantatos Nat. Photon. [Online DOI: 10.1038/s41566-023-01345-3] (2024)

2. **Mixed-cation vacancy-ordered perovskites ($Cs_2Ti_{1-x}Sn_XX_6$; X = I or Br): low-temperature miscibility, additivity, and tunable stability**, S. M. Liga, S. R. Kavanagh, A. Walsh, D. O. Scanlon, G. Konstantatos, J. Phys. Chem. C **127**, 21399–21409 (2023)
3. **Ultrafast cascade charge transfer in multibandgap colloidal quantum dot solids enables threshold reduction for optical gain and stimulated emission**, N. Taghipour, M. Dalmases, G. L. Whitworth, Y. Wang, G. Konstantatos, Nano Lett. **23**, 8637–8642 (2023)
4. **Cation-disorder engineering promotes efficient charge-carrier transport in $AgBis_2$ nanocrystal films**, M. Righetto, Y. Wang, K. A. Elmestekawy, C. Q. Xia, M. B. Johnston, G. Konstantatos, L. M. Herz, Adv. Mat. 2305009 (2023)
5. **Semitransparent image sensors for eye-tracking applications,** G. Mercier, E. O. Polat, S. Shi, S. Gupta, G. Konstantatos, S. Goossens, F. H. L. Koppens, ACS Photonics **10**, 2994–3000 (2023)
6. **Stabilization of environmentally-friendly Cs2TiBr6 perovskite nanocrystals with SnBr4** S. M. Liga, Y. Wang, G. Konstantatos, Chem. Commun. **59**, 5567 (2023)
7. **Frenkel excitons in vacancy-ordered titanium halide perovskites (Cs_2TiX_6),** S. R. Kavanagh, C. N. Savory, S. M. Liga, G. Konstantatos, A. Walsh, D. O. Scanlon, J. Phys. Chem. Lett. **13**, 10965-10975 (2022)
8. **Colloidal quantum dot infrared lasers featuring sub-single-exciton threshold and very high gain,** N. Taghipour, M. Dalmases, G. L. Whitworth, M. Dosil, A. Othonos, S. Christodoulou, S. M. Liga, G. Konstantatos, Adv. Mat. **2022**, 2207678 (2022)
9. **Engineering the polarization sensitivity in all-2D photodetectors composed of semimetal $MoTe_2$ and semiconductor WS_2**, J. Wu, D. Luo, P. Wen, X. Han, C. Wang, H. Yu, W. Gao,X. Liu, G. Konstantatos, J. Li, N. Huo, Adv. Opt. Mat. **10**, 2201902 (2022)
10. **Ag-refined kesterite in superstrate solar cell configuration with 9.7% power conversion efficiency,** Z. Wang, Y. Wang, N. Taghipour, L. Peng, G. Konstantatos, Adv. Funct. Mat. **32**, 2205948 (2022)
11. **Colloidal quantum dot light emitting diodes at telecom wavelength with 18% quantum efficiency and over 1 MHz bandwidth,** S. Pradhan, M. Dalmases, N. Taghipour, B.Kundu, G. Konstantatos, Adv. Sci. **9**, 2200637 (2022)
12. **Environmentally friendly $AgBiS_2$ nanocrystal inks for efficient solar cells employing green solvent processing,** Y. Wang, L. Peng, Z. Wang, G. Konstantatos, Adv. Ener. Mat. **12**, 2200700 (2022)
13. **Ultra-thin infrared optical gain medium and optically-pumped stimulated emission in PbS colloidal quantum dot LEDs,** Nima Taghipour, Ibrahim Tanriover, Mariona Dalmases, Guy L. Whitworth, Christina Graham, Avijit Saha, Onur Özdemir, Biswajit Kundu, Valerio Pruneri, Koray Aydin, Gerasimos Konstantatos, Adv. Funct. Mat. **32**, 2200832 (2022)
14. **Mixed $AgBiS_2$ nanocrystals for photovoltaics and photodetectors,** I. Burgués-Ceballos, Y. Wang, G. Konstantatos, Nanoscale **14**, 4987 (2022)
15. **Cation disorder engineering yields $AgBiS_2$ nanocrystals with enhanced optical absorption for efficient ultrathin solar cells,** Y. Wang, S. R. Kavanagh, I.Burgués-Ceballos, A. Walsh, D. Scanlon, G.Konstantatos, Nat. Photon. **16**, 235-241 (2022)

16. **Visible-blind ZnMgO colloidal quantum dot downconverters expand silicon CMOS sensors spectral coverage into ultraviolet and enable UV-band discrimination,** A. Saha, G. Kumar, S. Pradhan, G. Dash, R. Viswanatha, G. Konstantatos, Adv. Mat. **34**, 2109498 (2022)
17. **Highly efficient, ultrathin, Cd-free kesterite solar cells in superstrate configuration enabled by band level tuning via Ag incorporation,** Z. Wang, Y. Wang, G. Konstantatos, Nano Energy **94**, 106898 (2021)
18. **Low-threshold, highly stable colloidal quantum dot short-wave infrared laser enabled by suppression of trap-assisted Auger recombination,** N. Taghipour, G. L. Whitworth, A. Othonos, M. Dalmases, S. Pradhan, Y. Wang, G. Kumar, G. Konstantatos, Adv. Mater. **34**, 2107532 (2021)
19. **Solution-processed PbS quantum dot infrared laser with room-temperature tunable emission in the optical telecommunications window,** G. L. Whitworth, M. Dalmases, N. Taghipour, G. Konstantatos, Nature Photon. **15**, 738-742 (2021)
20. **Hybrid 2D-QD MoS_2–PbSe quantum dot broadband photodetectors with high-sensitivity and room-temperature operation at 2.5 µm**, B. Kundu, O. Özdemir, M. Dalmases, G. Kumar, G. Konstantatos, Adv. Opt. Mater. **2021**, 2101378 (2021)
21. **$AgBiSe_2$ colloidal nanocrystals for use in solar cells,** M. Z. Akgul, G. Konstantatos, ACS Appl. Nano Mater. **4**, 2887-2894 (2021)
22. **Highly transparent and conductive ITO substrates for near infrared applications**, R. A. Maniyara, C. Graham, B. Paulillo, Y. Bi, Y. Chen, G. Herranz, D. E. Baker, P.Mazumder, G. Konstantatos, V. Pruneri, APL Materials **9**, 021121 (2021)
23. **Ag_2ZnSnS_4–ZnS core–shell colloidal quantum dots: a near-infrared luminescent material based on environmentally friendly elements**, A. Saha, G. Konstantatos, J. Mater. Chem. C **9**, 5682-5688 (2020)
24. **Colloidal synthesis of lead-free $Cs_2TiBr_{6-x}I_x$ perovskite nanocrystals**, S. M. Liga, G. Konstantatos, J. Mater. Chem. C **9**, 11098-11103 (2021)
25. **Solid-state thin-film broadband short-wave infrared light emitters**, S. Pradhan, M. Dalmases, G. Konstantatos, Adv. Mater. **2020**, 2003830 (2020)
26. **Single-exciton gain and stimulated emission across the infrared telecom band from robust heavily-doped PbS colloidal quantum dots,** S. Christodoulou, I. Ramiro, A. Othonos, A. Figueroba, M. Dalmases, O. Ozdemir, S. Pradhan, G. Itskos, G. Konstantatos, Nano Lett. **20**, 5909–5915 (2020)
27. **Highly efficient, bright, and stable colloidal quantum dot short-wave infrared light-emitting diodes**, S. Pradhan, M. Dalmases, A. Baspinar, G. Konstantatos, Adv. Funct. Mater. **30** (2020)
28. **Colloidal AgBiS2 nanocrystals with reduced recombination yield 6.4% power conversion efficiency in solution-processed solar cells,** I. Burgués-Ceballos, Y. Wang, M. Z. Akgul, G. Konstantatos, Nano Energy **75**, 104961 (2020)
29. **Size and temperature dependent intraband optical properties of heavily n-doped PbS colloidal quantum dot solid-state films,** I. Ramiro, B. Kundu, M. Dalmases, O. Ozdemir, M. Pedrosa, G. Konstantatos, ACS Nano **14**, 6, 7161–7169 (2020)

30. **On-demand activation of photochromic nanoheaters for high color purity 3D printing,** A. W. Powell, A. Stavrinadis, S. Christodoulou, R. Quidant, G. Konstantatos, Nano Lett. **20**, 3485-3491 (2020)
31. **Low-cost RoHS compliant solution processed photovoltaics enabled by ambient condition synthesis of AgBiS2 nanocrystals,** M. Z. Akgul, A. Figueroba, S. Pradhan, Y. Bi, G. Konstantatos, ACS Photonics **7**, 588-595 (2020)
32. **Cation disorder and local structural distortions in AgxBi1–xS2 nanoparticles,** J. Kopula Kesavan, F. d'Acapito, P. Scardi, A. Stavrinadis, M. Z. Akgul, I. Burgués-Ceballos, G. Konstantatos, F. Boscherini, Nanomaterials **10**, 316 (2020)
33. **Ag2ZnSnS4 nanocrystals expand the availability of RoHS compliant colloidal quantum dots,** A. Saha, A. Figueroba, G. Konstantatos, Chem. Mater. **32**, 2148-2155 (2020)
34. **Mid- and long-wave infrared optoelectronics via intraband transitions in PbS colloidal quantum dots,** I. Ramiro, O. Özdemir, S. Christodoulou, S. Gupta, M. Dalmases, I. Torre, G. Konstantatos, Nano Lett. **20**, 1003-1008 (2020)
35. **Room-temperature direct synthesis of semi-conductive PbS nanocrystal inks for optoelectronic applications,** Y. Wang et al., Nature Commun. **10**, 5136 (2019)
36. **High sensitivity hybrid PbS CQD-TMDC photodetectors up to 2 µm,** O. Özdemir, I. Ramiro, S. Gupta, G. Konstantatos, ACS Photonics **6**, 2381-2386 (2019)
37. **Flexible graphene photodetectors for wearable fitness monitoring,** E. O. Polat, et al., Sci. Adv. **5**, eaaw7846 (2019)
38. **Origin of the below-bandgap turn-on voltage in light-emitting diodes and the high V_{OC} in solar cells comprising colloidal quantum dots,** S. Pradhan, M. Dalmases, G. Konstantatos, J. Phys. Chem. Lett. **10**, 3029-3034 (2019)
39. **Engineering vacancies in Bi_2S_3 yielding sub-bandgap photoresponse and highly sensitive short-wave infrared photodetectors,** N. Huo, A. Figueroba, Y. Yang, S. Christodoulou, A. Stavrinadis, C. Magén, G. Konstantatos, Adv. Opt. Mater. **7**, 1900258 (2019)
40. **High-efficiency colloidal quantum dot infrared light-emitting diodes via engineering at the supra-nanocrystalline level,** S. Pradhan, F. Di Stasio, Y. Bi, S. Gupta, S. Christodoulou, A. Stavrinadis, G. Konstantatos, Nature Nanotechnol. **14**, 72-79 (2019)
41. **Current status and technological prospect of photodetectors based on two-dimensional materials** G. Konstantatos Nature Commun. **9**, 5266 (2018)
42. **High-efficiency light-emitting diodes based on formamidinium lead bromide nanocrystals and solution processed transport layers** F. Di Stasio, I. Ramiro, Y. Bi, S. Christodoulou, A. Stavrinadis, G. Konstantatos Chem. Mater. **30**, 6231-6235 (2018)
43. **Recent progress and future prospects of 2D-based photodetectors** N. Huo, G. Konstantatos Adv. Mater. **1801164**, 1-27 (2018) **(Invited Review)**
44. **High carrier mobility in monolayer CVD-grown MoS2 through phonon suppression** N. Huo, Y. Yang, Y. Wu, X. Zhang, S. T. Pantelides, G. Konstantatos Nanoscale **10**, 15071-15077 (2018)

45. **White and brightly colored 3D printing based on resonant photothermal sensitizers** A. W. Powell, A. Stavrinadis, I. de Miguel, G. Konstantatos, R. Quidant Nano Lett. [Online DOI: 10.1021/acs.nanolett.8b01164] (2018)
46. **Colloidal Quantum Dot Tandem Solar Cells Using Chemical Vapor Deposited Graphene as an Atomically Thin Intermediate Recombination Layer** Y. Bi, S. Pradhan, M. Z. Akgul, S. Gupta, A. Stavrinadis, J. Wang, G. Konstantatos ACS Energy Lett. **0**, (2017)
47. **High open circuit voltage solar cells based on bright mixed-halide $CsPbBrI_2$ Perovskite nanocrystals synthesized in ambient air conditions** S. Christodoulou, F. Di Stasio, S. Pradhan, A. Stavrinadis, G. Konstantatos J. Phys. Chem. C **122**, 7621-7626 (2018)
48. **Infrared solution-processed quantum dot solar cells reaching external quantum efficiency of 80% at 1.35 µm and J_{sc} in excess of 34 mA cm^{-2}** Y. Bi, S. Pradhan, S. Gupta, M. Z. Akgul, A. Stavrinadis, G. Konstantatos Adv. Mater. **30**, 1704928 (2018)
49. **Low-temperature colloidal synthesis of CuBiS2 nanocrystals for optoelectronic devices** J. Wang, M. Z. Akgul, Y. Bi, S. Christodoulou, G. Konstantatos J. Mater. Chem. A **5**, 24621-24625 (2017)
50. **Ultrasensitive all-2D MoS_2 phototransistors enabled by an out-of-plane MoS_2 PN homojunction** N. Huo, G. Konstantatos Nature Commun. **8**, 572 (2017)
51. **Near-unity photoluminescence quantum yield in CsPbBr3 nanocrystal solid-state films via post-synthesis treatment with lead bromide** F. Di Stasio, S. Christodoulou, N. Huo, G. Konstantatos Chem. Mater. **29**, 7663-7667 (2017)
52. **Reducing interface recombination through mixed nanocrystal interlayers in PbS quantum dot solar cells** S. Pradhan, A. Stavrinadis, S. Gupta, G. Konstantatos ACS Appl. Mater. Interfaces **9**, 27390-27395 (2017)
53. **Matildite contact with media: First-principles study of AgBiS2 surfaces and nanoparticle morphology** F. Viñes, G. Konstantatos, F. Illas J. Phys. Chem. B [online DOI: 10.1021/acs.jpcb.7b03967] (2017)
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