Dmitri V. Talapin, FRSC

Ernest DeWitt Burton Distinguished Service Professor
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University of Chicago
GCIS, 929 East 57th Street, Rm. E205
Chicago, IL 60637

EDUCATION

2002 Dr. rer. nat., *Summa Cum Laude*, Chemistry, University of Hamburg, Germany
Adviser: *Prof. Dr. Horst Weller*
1996 Diploma (honors) in chemistry, Belarusian State University, Minsk, Belarus

PROFESSIONAL EXPERIENCE

2021 – Ernest DeWitt Burton Distinguished Service Professor, University of Chicago
2020 – 2021 Louis Block Professor, Pritzker School of Molecular Engineering, University of Chicago
2018 – 2020 Louis Block Professor, University of Chicago
2013 – 2018 Professor, Department of Chemistry, University of Chicago
2011 – 2013 Associate Professor, Department of Chemistry, University of Chicago
2007 – 2011 Assistant Professor, Department of Chemistry, University of Chicago
2005 – 2007 Staff Scientist, The Molecular Foundry, Lawrence Berkeley National Laboratory
2003 – 2005 Postdoctoral Fellow, IBM T.J. Watson Research Center, Yorktown Heights, NY, with *Christopher B. Murray*

PUBLICATIONS, PATENTS AND INVITED TALKS

Over 250 publications in refereed journals and edited books cited more than 43000 times with h-index 95 according to Web of Science (over 58000 citations with h-index 106 according to Google Scholar). More than 20 patents and filed patent applications. More than 150 invited talks at international conferences.

HONORS AND AWARDS

MRS Fellow (2024)
Jewish National Fund Faculty Fellowship (2022)
Visiting Miller Professorship, UC Berkeley (2021)
Highly Cited (top 1% by citations) Researchers List (2018)
ACS Inorganic Nanoscience Award (2018)
Finalist of Blavatnik National Award for Young Scientists (2017)

The 2016 list of most cited researchers in materials science and engineering by Elsevier Scopus data (2016)
Fellow of the Institute of Molecular Engineering (2015)
Fellow of the Royal Society of Chemistry (2014)
American Chemical Society Akron Section Award (2014)
Thomson Reuters Highly Cited Researcher (2014)
Materials Research Society Outstanding Young Investigator Award (2011)
Top 100 chemists (#21) of the past decade based on citation impact by Thompson Reuters (2011)
Camille Dreyfus Teacher-Scholar Award (2010)
The David and Lucile Packard Fellowship (2009)
Sloan Fellowship (2009)
NSF CAREER Award (2008)
LMUexcellent Fellowship, Germany (2007)
IBM Invention Achievement Award (2004, 2006)
Belarus National Academy of Sciences Award (1995)
International Soros Foundation Fellowship (1994)
1st Prize of the USSR Chemistry Olympiad (1991)

SERVICE TO SCIENTRIFIC COMMUNITY

Associate editor for *Chemical Science* published by the Royal Society of Chemistry

Editorial Board Member of *Nanoscale* (Royal Society of Chemistry), *Nanoscale Advances* (Royal Society of Chemistry), and *Multifunctional Materials* (IOP, 2016-2020)

Invited editor for thematic issue of *Chemical Reviews* „Nanoparticle Chemistry", special issue of the *Journal of Materials Chemistry* „Chemical Transformations in Nanoparticles", *Chemical Society Reviews* "Chemistry of Functional Nanomaterials", *MRS Bulletin* „Quantum Dot Light Emitting Devices" (2013) and *MRS Bulletin* "Functional Materials and Devices by Self-Assembly" (2020); *Accounts of Chemical Research* "Ligand and Surface Chemistry of Nanoparticles" (2023).

Research Symposia Organizer: "Nanophotonic Materials", SPIE (San Diego, 2008) "Low-Cost Solution-Based Deposition of Inorganic Materials for Electronic/Photonic Devices" 2008 Fall MRS (Boston); "New developments in energy conversion and light-harvesting" 237th ACS National Meeting (Salt Lake City, 2009); "Nanocrystals as Precursors for Complex Structures through Self-Assembly and Chemical Transformations" 2009 Spring MRS (San Francisco); "Transport in Nanoengineered Materials" 2010 (Chicago); ONSNO12 (Dresden, 2012). APS focus session on the physics of hierarchical materials (March APS Meeting, Los Angeles 2018); "Challenges and Opportunities in Solution Synthesis of Functional Nanomaterials" 2022 Fall MRS Meeting (Boston)

Membership in Professional Societies: American Chemical Society, Materials Research Society, Royal Society of Chemistry, American Association for the Advancement of Science

INDUSTRY ENGAGEMENT AND INTERPRENERSHIP

Co-Founder and **Board Member** of NanoPattern Technologies, Inc. (2018 - current).

Consulting: 10+ years of consulting engagements with industry leaders and startups.

RESEARCH FUNDING

Secured over $15M in research funding from Federal funding agencies, industry and private foundations.

PI NSF CHE-2404291 Colloidal Chemistry of III-V Semiconductor Quantum Dots in Molten Inorganic Salt. $550,000

PI NSF SSMC Strategic Planning Workshop $73,500

Co-PI STTR Phase 2 with Tetramer (DT allocation: $375,000)

PI NSF Phase I Center for Chemical Innovations (M-STAR, $1,800,000)

Co-PI Weizmann-Uchicago Quantum Information Sciences Collaborative Research Program $25,000

Co-PI Department of Energy. Elucidating Emergence in Multiscale Driven Systems (Lead PI: N. Ginsberg – UC Berkeley), 2022-2025 (DT allocation: $502,000).

Co-PI EFRC Advanced Materials for Energy-Water Systems Center (AMEWS). Ditector: Seth Darling, 2022-2026 (DT allocation: $475,000)

PI STTR Phase 1 with Tetramer (DT allocation: ~$100,000)

Co-PI Samsung QD Cluster Collaboration (DT allocation: ~$450,000)

PI DOD AFOSR MXenes $625,000

Co-PI NIST ChiMad Center (DT allocation: $200,000)

Co-PI NSF IMOD STC (DT allocation: $550,000)

PI Samsung Global Research Outreach: Solution-processed III-V nitride and ternary phosphide quantum dots for stable blue QLEDs, 2020–2021. $150,000.

PI NSF DMR-2004880 Molten Inorganic Salts as Solvents and Reactive Media for Colloidal and Solid-State Chemistry of Low-Dimensional Materials. 2020-2023 $495,000

PI DOD AFOSR DURIP 12866136 Multimodal Platform for Integration of Functional Nanocomponents. 2019-2021 $238,000.

PI NSF CHE-1905290 Fundamental Insights into Direct Optical Lithography of Functional Inorganic Nanomaterials (DOLFIN). NSF-CHE 2019-2022 $450,000

Co-PI DoE BES MICCoM 2: Midwest Integrated Center for Computational Materials/Argonne (PI: Giulia Galli), 2019–2023. UChicago Subaward. (Co-I allocation: $200,000).

Co-PI EFRC Advanced Materials for Energy-Water Systems Center (AMEWS). Ditector: Seth Darling, 2018-2022 (DT allocation: $165,000)

PI Samsung Global Research Outreach: Indium-Gallium Phosphide Quantum Dots for Display Applications, 2019–2020. $200,000.

Co-PI Department of Energy. Elucidating Emergence in Multiscale Driven Systems (Lead PI: N. Ginsberg – UC Berkeley), 2018-2021 (DT allocation: $510,000).

PI Applied Materials unrestricted gift for commercialization of DOLFIN technology. $25,000

PI AFOSR Grant No. FA9550-18-1-0099: Directed 3D assembly of inorganic semiconducting materials exploiting photochemically triggered building blocks, 2017-2021. $1,800,000 (PI allocation: $950,000).

PI Samsung Global Research Outreach: Cd-Free Anisotropic Nanomaterials with Enhanced Light Outcoupling Efficiency, 2016–2019. $300,000.

PI NSF Grant No. DMR-1629601: DMREF: Collaborative Research: Tackling disorder and ensemble broadening in materials made of semiconductor nanostructures, 2016-2019. $1,000,000 (PI allocation: $333,333).

PI NSF Grant No. CHE-1611331: Colloidal Atomic Layer Deposition (c-ALD): Quest for atomic precision in nanomaterial synthesis, 2016–2019. $420,000.

PI NSF Grant No. DMR-1611371: Colloids in molten inorganic salts and liquid metals, 2016–2019. $460,000.

Co-I DOD/DARPA Grant No. AFRL-16-7638-UC-DT: Ligand and Matrix Chemistry for Improved Colloidal Quantum Dot SWIR and MWIR Detector Performance (PIs: Nanditha Dissanayake and Sean Keuleyan), 2016–2017. Subcontract allocation: $240,000.

Co-I DoE BES MICCoM: Midwest Integrated Center for Computational Materials/Argonne Work Order 10 (PI: Giulia Galli), 2015–2019. UChicago Subaward: $4,352,365 (Co-I allocation: $606,445).

Co-I UChicago Water Initiative Seed Fund, 2013-2015. $112,500.

Co-I UChicago-Argonne Strategic Collaborative Initiative. Dynamic Self-Assembly, 2014. $75,000

Co-I NSF Grant No. DMR-1420709: UChicago Materials Research Science and Engineering Center (PI: Margaret Gardel), 2014–2020. $20,000,000 (Co-I year 3 allocation: $65,000).

Co-I DOD-AFOSR Grant: BRI 7 – Nanocrystals in the Strong Coupling Regime: Engineering New Materials from Collective States (PI: Gregory Engel), 2014–2017. $1,450,000 (CO-I allocation: $483,333).

PI II-VI Foundation Grant: Understanding morphological stability of nanostructured semiconductors, 2015–2017. $142,448.

PI UChicago – ANL Strategic Collaborative Initiative. Spectroscopic studies of nanocrystal assemblies linked by molecular metal chalcogenide Zintl ions, 2010-2012. $150,000

PI NSF Grant No. DMR-1310398: Colloidal III-V nanomaterials - New opportunities in chemistry and device applications, 2013–2016. $450,000.

PI Samsung Global Research Outreach: Polarized emitters for display technologies, 2014–2016. $300,000.

PI DOD-ONR Grant No. N00014-13-1-0490: III-V nanocrystals for thin-film photovoltaics, 2013–2017. $420,000.

PI University of Chicago Innovation Fund. Interfaces in nanostructured thermoelectric materials. 2014-2015. $100,000.

Co-I WM Keck Foundation Grant: Designer atoms - A new paradigm for designing materials from nanoparticle building blocks (PI: Gregory Engel), 2012–2015. $1,000,000 (Co-I allocation: $330,000).

PI II-VI Foundation Grant: Chemically engineered interfaces in nanostructured thermoelectric materials, 2012–2015. $198,000.

PI DoE Grant No. DE-EE0005312: Solution processed PV absorbers based on colloidal nanocrystals linked with metal chalcogenide ligands, 2011–2016. $900,000.

Co-I NSF Grant No. DMR-0820054: UChicago Materials Research Science and Engineering Center (PI: Ka Yee Lee), 2008–2013. Total Co-I allocation $630,000

PI Evident Technologies Award: The bottom-up design of thermoelectric materials using nanostructures linked with the molecular metal chalcogenide complexes, 2011–2014. $235,106.

PI DOD-ONR Grant No. N00014-13-1-0490: Chemical control of exchange coupling in three-dimensional nanocrystal arrays: wave function delocalization and miniband formation, 2010–2013. $450,000.

PI American Chemical Society Petroleum Research Fund Grant No. 48636-G10: Solution-Processed Inorganic Semiconductors for Thin-Film Photovoltaics, 2008–2010. $50,000.

PI The Camille & Henry Dreyfus Foundation Grant: III-V semiconductors through solution-phase synthesis, 2010–2015. $75,000.

PI Alfred P. Sloan Research Fellowship in Chemistry, 2010. $50,000.

PI The David and Lucile Packard Foundation Fellowship: Molecular solids with programmable properties, 2009–2017. $875,000.

PI NSF CAREER Grant No. DMR-0847535: Functional nano-composite materials: synthetic methodology and applications, 2009–2014. $605,000.

PI Evident Technologies Award: Thermoelectric Materials Based on Bi_2Te_3-Sb_2Te_3 Nanoparticle Assemblies, 2008–2010. $211,960.

TEACHING

Chem 203 Chemisty of Materials (Undergraduate); Spring 2023-
Chem 390 Solids, Materials, Surfaces (Graduate); Fall 2019-
Chem 201 Inorganic Chemistry I (Undergraduate); Winter 2014-2017, 2019-2023
Chem 390 Materials Chemistry I (Graduate); 2015-2018
Chem 305 Nanoscale materials (Graduare); 2007-2014
Chem 306 Chemistry of the Elements (Graduate); 2008-2015

MENTORING

Graduate Advisor (Ph.D.) – 26 total
Jing Huang (2007-2013), Sara M. Rupich (2007-2013); Wenyong Liu (2008-2014); Chenyuang Jiang (2008-2013); Dmitriy S. Dolzhnikov (2010-2015); Hao Zhang (2010-2015); James Mathew Kurley (2010-2016); Michael A. Boles (2010-2015); Igor Fedin (2011-2017); Vishwas Srivastava (2013-2018); Patrick Cunningham (2013-2018); Eric Janke (2013-2019); Maggie Hudson (2014-2020); Vlad Kamysbayev (2015-2020); Wooje Cho (2016-present); Jia-Ahn Pan (2016-2022); Joshua Portner (2016-2023); Aritrajit Gupta (2018-present); Haoqi Wu (2018-present); Di Wang (2019-present); Zirui Zhou (2020-present); Zehan Mi (2021-present); Ruiming Lin (2021-present); Ahhyun Jeong (2021-present); Will Burke (2021-present); Young-Hwan Kim (2022-present)

Graduate Advisor (M.S.) – 3 total
Andrew Weber (2010); Dmitry Baranov (2010); Jingxing Geng (2021)

Postdoctoral Advisor – 21 total
Maksym Kovalenko (2008-2011); Jong-Soo Lee (2007-2012); Maryna Bodnarchuk (2008-2011); Angshuman Nag (2010-2012); Dae-Sung Chung (2011-2012); Sandrine Ithurria Lhullier (2010-2012); Jae Sung Son (2012-2014); Matthew Panthani (2012-2014); Chunxing She (2013-2015); Tae Ky An (2014-2015); Jaeyoung Jang (2013-2015); Ge Kong (2016), Yuanyuan Wang (2014-2019), Abhijit Hazarika (2015-2017), Xinzheng Lan (2016-2020), Himchan Cho (2018-2021); Igor Coropceanu (2017-2021), Chenkun Zhou (2019-present); Justin Ondry (2021-present); Jun Hyuk Chang (2022-present); James Cassidy (2022-present)

Research Advisor Undergraduate Students – 16 total
Robert Citron (2007-2008); Eric Wong (2008-2011); Graham Norris (2010-2011), Alex Ruditskiy (2010-2011); Boris Spokoyny (2007-2010); Travis Dietz (2012-2013); Fernando Castro (2020-2013); Taha Ezzyat (2013-2014); Stephanie Diaz (2014-2016); Jacob Russell (2013-2016), Kavan Mulloy (2015 - 2018), Jason Lynch (2018-2019), Eleanor Dunietz (2016-2019), Nivedina Sarma (2019-2020), Thomas Habte (2018-2020), Alex Hinkle (2019-2022).

Research Advisor to Local High School Students
Dan Ilyin (2010-2011)

Visiting scientists
Maria Ibáñez (2010); Ilka Kriegel (2010); João Batista Souza Junior (2015, 2020)

Department and University Committee Service

The University of Chicago :

JFI Appointments Committee (2018-)
Chemistry Appointments Committee (2016-2019)
Chemistry Teaching Matters Committee (2016-2018, 2019-)
JFI Appointments Committee (2016-2017)
Chemistry Awards Committee (2018-2019)
Dissertation Embargo Policy Committee (2014-2015)
JFI Website Committe (2013-2015)
College Senate (2011-)
Intellectual Property Committee (2011-2013)
Clean room instrumentation committee (2011-)
Admissions and graduate affairs committee (2008-2014)
Inorganic graduate program committee (2008-2011)
Graduate student recruitment committee (2010-2012)
Safety Committee (2008-2011)
Clean room design committee (2009-)
MRSEC IRG3 leader (together with S. Sibener) (2009-)
MRSEC Equipment committee (2009-2011)

Argonne National Laboratory:

MSD Director Search Committee (2011-2012)
Electron Microscopy Center Proposal Review Committee (2009-2010)
Center for Nanoscale Materials Proposal Review Committee (2008)

INVITED TALKS AND SEMINARS (2008-)

2024

Nov 2024 DGIST Workshop
Oct 2024 DOD Seminar
Oct 2024 Northwestern
Sept 2024 QD&PV Forum (Sungkyunkwan University, South Korea)
Sept 2024 Seoul National University (Seoul, South Korea)
Sept 2024 Samsung Advanced Institute of Technology (Suwon, South Korea)
Aug 2024 Applied Materials Corporation (Santa Clara, CA)
Aug 2024 ACS Fall Meeting (Denver, CO) – three invited talks
Aug 2024 Third MXene International Conference (Keynote, Philadelphia, PA)
July 2024 Nanodragon Symposium (Uni-Hamburg, Hamburg, Germany)
Apr 2024 Spring MRS Meeting (Seattle, WA) – two invited talks
Mar 2024 QD2024 (Munich, Germany)
Mar 2024 Advanced Manufacturing and Material Synthesis workshop (NSLS-II, BNL)
Jan 2024 POSTECH Seminar (Korea)

2023

Dec 2023 Fall MRS Meeting (Boston, MA)
Sept 2023 KAIST Seminar (South Korea)
Aug 2023 QD PV Forum (Seoul, South Korea)
Aug 2023 Tsinghua University (Beijing, PRC)
Aug 2023 Nanjing University (Nanjing, PRC)
Aug 2023 Louis Brus Symposium (Columbia University)
Aug 2023 Bad Honnef Physics Summer School (Germany)
July 2023 Ohio Photochemical Society Meeting (Bowling Green, OH)
July 2023 NaNaX10 Conference (ISTA, Austria)
Jun 2023 Global Conference on Innovation Materials (Jeju island, Korea)
May 2023 Nanoparticle Assembly Meeting at Kavli Institute of Theoretical Physics (Santa Barbara, CA)
Apr 2023 Spring MRS Meeting (San Francisco, CA)
Mar 2023 μ-LED Association Quantum Dots webinar (invited talk)

2022

Dec 2023 KAIST Seminar
Dec 2022 MRS Fall Meeting (Boston, MA) – two invited talks
Oct 2022 Illinois Institute of Technology Seminar (Chicago, IL)
Oct 2022 Hamburg University (Germany)
Sept 2022 Markette University Seminar
Sept 2022 Penn State Russell Marker Lecture (Penn State University)

Aug 2022 ACS Fall Meeting (Chicago, IL)
Aug 2022 MXenes Conference (Drexel University)
Jun 2022 – Naval Research Laboratory
May 2022 – DOD AFOSR Program Review Meeting
Apr 2022 – M-Talk (PRC)
Mar 2022 – Quantum Dot Symposium
Jan 2022 – Illinois Institute of Technology Colloquium

2021
Dec 2021 – TÜBİTAK TBAE Virtual Seminar (Turkey)
Nov 2021 – TCL Keynote presentation
Nov 2021 - NanoGe Fall Meeting
Oct 2021 – UC Berkeley Physical Chemistry Seminar
Oct 2021 – Miller Institute Seminar, UC Berkeley, CA
Sept 2021 – Korea University (South Korea)
Aug 2021 – Workshop on Semiconductors, Optoelectronices and Nanostructures (DGIST, South Korea)
Aug 2021 – International Meeting on Information Display, IMID (Seoul, South Korea)
Jul 2021 – Bad Honnef Summer Physics School (Bad Honnef, Germany)
Jun 2021 – University of Aveiro - Aveiro Institute of Materials (Aveiro, Portugal)
May 2021– IAAM Advanced Materials Lecture Series
Apr 2021 – MRS Spring Meeting
Apr 2021 – UC Riverside, Department of Chemistry (Riverside, CA)
Mar 2021 – Nanjing University (PRC)
Mar 2021 – NanoGe meeting (Germany)

2020
Dec 2020 – News in Nanocrystals (MIT talks series)
Nov 2020 – University of Nurnberg
Oct 2020 – Samsung Technology Fair (Keynote presentation)
Oct 2020 – MXenes Conference (PRC)
Sept 2020 – University of Virginia, Department of Chemistry
Aug 2020 – Seminar at Thermo Fisher
Aug 2020 – ACS Fall Meeting
Jun 2020 – Air Force Research Laboratory Chemistry Forum Webinar
May 2020 – Department of Chemistry Research Seminar. University of Chicago (Chicago, IL)
May 2020 – AFOSR Program Review Meeting
Feb 2020 – GRC Atomically Precise Nanochemistry (Galverstone, TX)
Jan 2020 – PME Research Seminar. University of Chicago (Chicago, IL)

2019

Dec 2019 - MRS Fall Meeting, Boston, MA (2 invited talks)
Nov 2019 - Seaborg Metal Symposium for P. Alivisatos, University of California, Los Angeles, CA
Nov 2019 – University of Hamburg, Hamburg, Germany
Nov 2019 - NanoGe Fall Meeting, Berlin, Germany (2 talks including plenary)
Oct 2019 – University of Southern California, Los Angeles, CA
Sept 2019 - Institute of High Pressure Physics, Warsaw, Poland
Sept 2019 – Nanax9 Conference, Hamburg, Germany
Sept 2019 – Institute of Physics of Belarussian Academy of Sciences, Minsk, Belarus
Aug 2019 - ACS Fall Meeting, San Diego, CA (2 talks)
Aug 2019 - TCL Research Division, Guangzhou, PRC
May 2019 - Ohio Photochemistry Society (Plenary)
Apr 2019 - Rice University, Houston, TX
Apr 2019 - MRS Spring Meeting, Phoenix, AZ
Apr 2019 - ACS Spring Meeting, Orlando, FL (4 talks)
Mar 2019 - Quantum Dots Forum 2019, San Diego, CA
Mar 2019 - Purdue University, West Lafayette, IN
Feb 2019 - Gordon Conference on Challenges and Opportunities at the Nanoscale: Applications, Simulation, Advanced Characterization and Novel Manufacturing, Ventura, CA
Jan 2019 – CNM ANL Retreat

2018

Dec 13, 2018 – UIUC, Department of Chemistry
Dec 2018 Fall MRS (Boston, MA)
Nov 2018 Electronic Materials and Nanotechnology for Green Environment Conference (Korea)
Oct 2018 ACS Midwest Regional Meeting (Ames, IA)
Oct 2018 The University of Hong Kong (Hong Kong, PRC SAR)
Sept 2018 Illinois Ignite 2018 (Sept 27, Rosemont, IL)
Sept 2018 Packard Fellows Reunion (San Diego, CA)
Aug 2018 Dresden MPI meeting
Aug2018 ACS Meeting - Inorganic Nanoscience Award Symposium (Boston, MA)
Aug 2018 University of Toronto
Aug 2018 Advanced Materials, CA
July 2018 Gordon Conference
July 2018 NYU
June 2018 QD 2018 – Plenary talk (Toronto)
Mar 2018 ACS Meeting (New Orleans)
Mar 2018 March APS Meeting (Los Angeles, CA)
Feb 2018 UC Berkeley

Feb 2018 The Molecular Foundry, LBNL (Berkeley, CA)

2017

Dec 2017 Northwestern University (Evanston, IL)
Dec 2017 Columbia University (NYC)
Dec 2017 Brookhaven National Lab (NY)
Dec 2017 Fall MRS (Boston, MA)
Nov 2017 Nanosys, Inc (Milpitas, CA)
Oct 2017 SAIT Future Technologies Forum (Samsung, Korea)
Oct 2017 University of Illinois in Chicago (Chicago, IL)
Sept 2017 Opto-electronics of 2-D Nanostructured Semiconductors: Parabolic vs. Linear Dirac Bands – NanoGe (Barcelona, Spain)
Sept 2017 Fundamental Processes in Semiconductor Nanocrystals – NanoGe (Barcelona, Spain)
Sept 2017 ETH Zurich (Zurich, Switzerland)
Sept 2017 Belarussian State University (Minsk, Belarus)
Aug 2017 Peking University (Beijing, PRC)
Aug 2017 Chinanano (Beijing, China)
Aug 2017 IMRS (Cancum, Mexico)
Aug 2017 ANL Center for Nanoscale Materials (Argonne, IL)
Aug 2017 CASP EFRC Summer School (Los Alamos Nat Lab, NM)
Jul 2017 Blavatnik Science Symposium (New York City, NY)
Jul 2017 Invited talk at NaNaX8 conference (Braga, Portugal)
May 2017 Italian Institute of Technology (Genoa, Italy)
May 2017 Invited talk at Phonsi Summer School (Nice, France)
May 2017 APS Physics Next Workshop: Materials Design and Discovery (Long Island, NY)
May 2017 Charge and Energy Transport in Nanocrystal Assemblies (CENTA 2017, Minneapolis, MN)
Apr 2017 MRS Spring Meeting (Phonix, AZ)
Apr 2017 ACS National Meeting (San Francisco, CA)

2016

Oct 2016 US Department of Defense seminar (Arlington, VA)
Sept 2016 Workshop on solution-phase self-assembly (Lincoln, NE)
Aug 2016 Grain Boundary Summit (First Solar, Inc. Perrysburg, OH)
Jul 2016 Hybrid Thermoelectric Workshop (Singapore)
May 2016 Georgia Institute of Technology (Atlanta, GA)
Apr 2016 New York University (New York City, NY)
Apr 2016 Shenzhen Technology Park (Shenzhen, China)
Apr 2016 Hong Kong Science and Technology Park (Hong Kong)
Apr 2016 Samsung Advanced Institute of Technology, SAIT (Korea)

Mar 2016 MRS Spring Meeting (Phoenix, AZ)
Mar 2016 The Molecular Foundry (Berkeley, CA)
Mar 2016 Hamburg University (Hamburg, Germany)
Mar 2016 DESY (Hamburg, Germany)

2015
Dec 2015 Brown University
Nov 2015 JFI Seminar
Nov 2015 II-VI Foundation Conference
Oct 2015 Vanderbilt University
Oct 2015 Purdue University
Sept 2015 Columbia University
Sept 2015 GaTech
Aug 2015 Dresden (Germany)
Aug 2015 Nanosys, Inc (Milpitas, CA)
Jun 2015 Joint ONR/AFOSR Program Review (Sant Barbara, CA)
May 2015 Hong Kong
May 2015 UChicago PSD Innovation Forum
May 2015 DuPont Experimental Station
Apr 2015 Sciencepalooza! The University of Chicago (Chicago, IL)
Apr 2015 Faraday Discussions (ANL, IL)
Apr 2015 20 Years of Quantum Dots at Los Alamos Symposium (Santa Fe, NM)
Feb 2015 UC Berkeley (Berkeley, CA)

2014
Dec 2014 MRS Fall Meeting – invited talk at Symposium JJ (Boston, MA)
Dec 2014 MRS Fall Meeting – invited talk at Symposium BB (Boston, MA)
Nov 2014 Northwestern University (Evanston, IL)
Nov 2014 Woodward Harvard/MIT inorganic lecture series (Boston, MA)
Nov 2014 KAUST (Saudi Arabia)
Nov 2014 Akron University and ACS Meeting at Akron (Akron, OH)
Oct 2014 Iowa State University
Sep 2014 Erlangen (Germany)
Sep 2014 Oxford, UK
Sep 2014 Packard Meeting (Monterey, CA)
Aug 2014 ACS Meeting (San Francisco, CA) – two invited presentations
Aug 2014 University of Toronto (Canada)
Jul 2014 Northwestern University (Evanston, IL)
Jun 2014 SID Display Week 2014 Meeting (San Diego, CA)
May 2014 NaNaX6 (Austria)

May 2014 "Innovations in Materials Chemistry" Symposium, UPitt (Pittsburg, PA)
Apr 2014 MRS Spring Meeting, Invited talk at Symposium TT (San Francisco, CA)
Mar 2014 Science at the Interface Symposium, University of Chicago
Feb 2014 University of Winconsin, Deparment of Chemical Engineering (Madison, WI)
Feb 2014 University of Utah, Department of Chemistry (Salt Lake City, UT)

2013
Dec 2013 MRS Fall Meeting, Invited talk at Symposium OO (Boston, MA)
Dec 2013 MRS Fall Meeting, Invited talk at Symposium O (Boston, MA)
Nov 2013 POSTECH University, MSE Department (Pohang, Korea)
Nov 2013 DGIST Global Innovation Festival (Daegu, Korea)
Oct 2013 SunShot Initiative 2nd Thin-Film Photovoltaic Workshop (Denver, CO)
Sept 2013 University of Minnesota, Department of Physics (Twin Cities, MN)
Sept 2013 Packard Fellows Meeting (Denver, CO)
Sept 2013 247th ACS Meeting (Indianapolis, IN) – invited talk
July 2013: Indo-US Symposium on Molecular Materials (Bangalore, India)
Apr 2013: MRS Spring Meeting (San Francisco, CA) – Invited Talk at Symposium L
Apr 2013: MRS Spring Meeting (San Francisco, CA) – Invited Talk at Symposium Q

2012
Dec 2012: UC Davis, Depatment of Chemistry (Davis, CA)
Nov 2012: Caltech, Department of Chemistry (Pasadena, CA)
Nov 2012: II-VI Foundation Conference (Tuscon, AR)
Nov 2012: Seoul Science Forum (Seoul, Korea)
Oct 2012: Argonne National Laboratory, Materials Sciences Division
Oct 2012: Iowa State University, Department of Chemistry
July 2012: ONSNO12 Workshop (Dresden, Germany)
May 2012: DOD ONR Meeting (Arlington, VA)
May 2012: Quantum Dots 2012 (Santa Fe, NM)
Apr 2012: Berkeley Nanotechnology Forum (Berkeley, CA)
Mar 2012: Colorado School of Mines, Department of Physics (Denver, CO)
Feb 2012: University of Toronto, Chemistry Department (Toronto, Canada)

2011
Dec 2011: MRS Fall Meeting (Boston, MA)
Nov 2011: National Renewable Energy Laboratory (Golden, CO)
Nov 2011: University of Colorado (Boulder, CO)
Nov 2011: AVS 58th International Symposium (Nashville, TN)
Oct 2011: UIUC (Urbana, IL)
Oct 2011: Science and Technology in Society Forum (Kyoto, Japan)

Sept 2011: TEDx LaJolla Meeting (San Diego, CA)
Sept 2011: Indiana University (Bloomington, IN)
June 2011: Northwestern University (Evanston, IL)
May 2011: Michigan State University (East Lansing, MI)
Apr 2011: MRS Spring Meeting (San Francisco, CA) – OYI Award Plenary Talk
Apr 2011: IBM Almaden Research Center (San Jose, CA)
Apr 2011: Florida State University (Tallahassee, FL)
Apr 2011: Columbia University (New York City, IL)
Mar 2011: Illinois Institute of Technology (Chicago, IL)

2010

Nov 2010: Case Western Reserve University (Cleveland, OH)
Oct 2010: University of Massachusetts, Chemistry Department (Amherst, MA)
Oct 2010: Pioneer Nano-Forum Seoul (Yonsei University, Seoul, South Korea)
Oct 2010: Korean Chemical Society Meeting (Daegu, South Korea)
Oct 2010: University of Chicago Department seminar (Chicago, IL)
Sep 2010: Ludwig-Maximilians-Universität München, Physics Department (Munich, LMU)
Sep 2010: Packard Fellows Meeting (Monterey Bay, CA)
Aug 2010: GRC Solid State Chemistry (New London, NH)
Jun 2010: GRC Inorganic Chemistry (Biddeford, ME)
Jun 2010: Max Plank Institute for Solid State Research (Stuttgart, Germany)
May 2010: Carnegie Mellon University, Department of Chemistry (Pittsburg, PA)
Apr 2010: MRS Spring Meeting (San Francisco, CA) – Invited Talk at Symposium C
Apr 2010: MRS Spring Meeting (San Francisco, CA) – Invited Talk at Symposium T
Apr 2010: Workshop "Transport at the Nanoscale" The Molecular Foundry, LBNL (Berkeley, CA)
Mar 2010: Los Alamos National Laboratory, Chemistry Division (Los Alamos, NM)
Feb 2010: University of California at Santa Barbara, Chemistry Department (Santa Barbara, CA)
Jan 2010: University of Notre Dame, Chemistry Department (Notre Dame, IN)

2009

Dec 2009: MRS Fall Meeting (Boston, CA) - Invited Talk on Transport in nanocrystal arrays
Dec 2009: MRS Fall Meeting (Boston, CA) – Invited Talk on nanoparticle self-assembly
Nov 2009: Cornell University, Department of Materials Science and Engineering (Ithaca, NY)
Oct 2009: The US-China Workshop on New Materials (Peking University, Beijing, China)
Aug 2009: Sagamore XVI Meeting (Santa Fe, NM)
Jul 2009: GRC "Clusters, Nanocrystals & Nanostructures" (South Hadley, MA)
Jun 2009: North American Solid-State Chemistry Conference (Columbus, OH)
Jun 2009: JFI Seminar, UChicago (Chicago, IL)

May 2009: ACS Meeting: Gibbs Award Symposium in honor of Louis Brus
Apr 2009: MRS Spring Meeting (San Francisco, CA)
Mar 2009: ACS Spring (Salt Lake City, UT)
Jan 2009: Ohio University (Athens, OH)

2008

Nov 2008: Seminar at Argonne National Laboratory (Argonne, IL)
Oct 2008: Illinois Institute of Technology (Chicago, IL)
Jan 2008: University of California at Santa Cruz (Santa Cruz, CA)

PUBLICATIONS (*=corresponding author)

from the University of Chicago

Submitted

Ultrafast symmetry control in photoexcited quantum dots

In Situ Formation of Ripplocations in Hybrid Organic-Inorganic MXenes

C. P. N. Tanner, V. R. K. Wall, M. Gababa, J. Portner, A. Jeong, M. J. Hurley, N. Leonard, J. G. Raybin, J. K. Utterback, A. Kim, A. Fluerasu, Y. Sun, J. Moeller, A. Zozulya, W. Jo, A. Madsen, D. V. Talapin, S. W. Teitelbaum, N. S. Ginsberg. Suppressed self-diffusion of nanoscale constituents of a complex liquid. *Submitted.* arXiv:2404.17756

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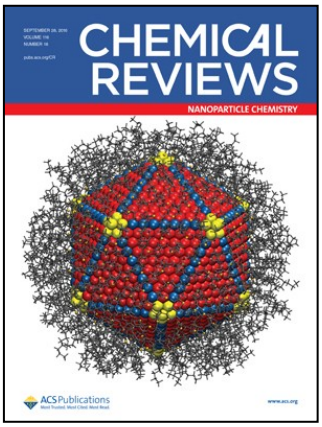

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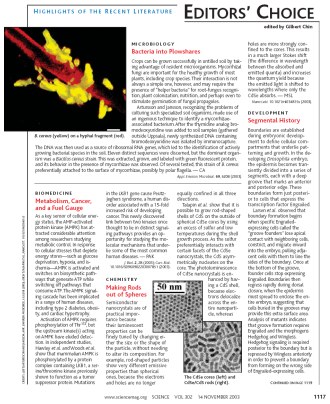
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Bacteria into Plowshares

DEVELOPMENT

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CHEMISTRY

Making Rods out of Spheres

50 nm

The CdSe cores (left) and CdSe/CdS rods (right).

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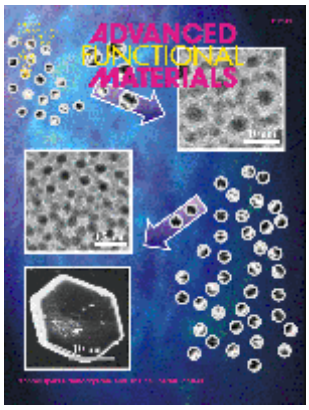

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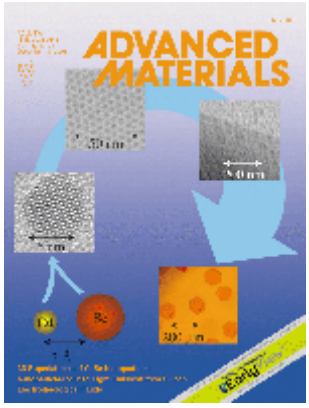

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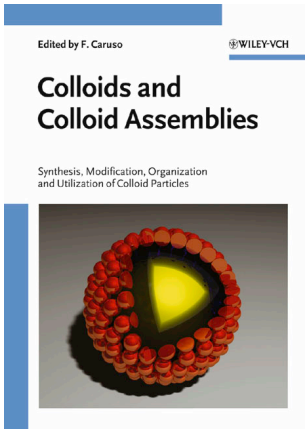

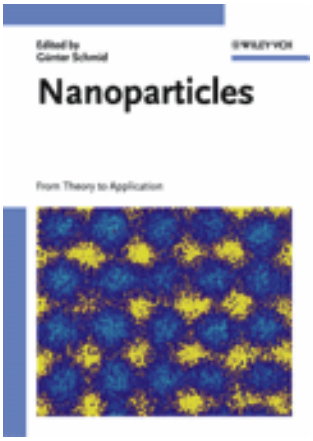

PATENTS AND PATENT APPLICATIONS

MATERIALS AND METHODS FOR THE PREPARATION OF NANOCOMPOSITES

Application number: 20140346442
Abstract: Disclosed herein is an isolable colloidal particle comprising a nanoparticle and an inorganic capping agent bound to the surface of the nanoparticle, a method for making the same in a biphasic solvent mixture, and the formation of structures and solids from the isolable colloidal particle. The process can yield photovoltaic cells, piezoelectric crystals, thermoelectric layers, optoelectronic layers, light emitting diodes, ferroelectric layers, thin film transistors, floating gate memory devices, phase change layers, and sensor devices.
Type: Application
Filed: May 16, 2012
Issued: November 27, 2014
Assignee: THE UNIVERSITY OF CHICAGO
Inventors: Angshuman Nag, Dmitri V. Talapin

Materials and Methods for the Preparation of Nanocomposites

Application number: 20120104325
Abstract: Disclosed herein is an isolable colloidal particle comprising a nanoparticle and an inorganic capping agent bound to the surface of the nanoparticle, a solution of the same, a method for making the same from a biphasic solvent mixture, and the formation of structures and solids from the isolable colloidal particle. The process can yield photovoltaic cells, piezoelectric crystals, thermoelectric layers, optoelectronic layers, light emitting diodes, ferroelectric layers, thin film transistors, floating gate memory devices, imaging devices, phase change layers, and sensor devices.
Type: Application
Filed: April 23, 2010
Issued: May 3, 2012
Assignee: THE UNIVERSITY OF CHICAGO
Inventors: Dmitri V. Talapin, Maksym V. Kovalenko, Jong-Soo Lee, Chengyang Jiang

Nano-encoding and decoding information related to printed texts and images on paper and other surfaces

Patent number: 8139901
Abstract: A method and system for nano-encoding and decoding information related to printed texts and images on paper and other surfaces is provided. The system and method includes a nano-encoder for encoding information related to printed texts and images; and then collocating the encoded information with the related printed texts and/or images. The system also includes a nano-decoder for decoding information encoded by the nano-encoder. The nano-decoder includes a text processing database having a translator database. The translator database includes

a definition database; and a summary database. In addition, the system and method includes detecting luminescent nano particles and/or magnetic nano particles; and determining invariant properties of the detected nano particles. The invariant properties are then matched with coded information.
Type: Grant
Filed: July 8, 2011
Issued: March 20, 2012
Assignee: International Business Machines Corporation
Inventors: Dimitri Kanevsky, Dmitri V. Talapin

Method and system for nano-encoding and decoding information related to printed texts and images on paper and other surfaces

Patent number: 8036415
Abstract: A method and system for nano-encoding and decoding information related to printed texts and images on paper and other surfaces is provided. The system and method includes a nano-encoder for encoding information related to printed texts and images; and then collocating the encoded information with the related printed texts and/or images. The system also includes a nano-decoder for decoding information encoded by the nano-encoder. The nano-decoder includes a text processing database having a translator database. The translator database includes a definition database; and a summary database. In addition, the system and method includes detecting luminescent nano particles and/or magnetic nano particles; and determining invariant properties of the detected nano particles. The invariant properties are then matched with coded information.
Type: Grant
Filed: January 3, 2007
Issued: October 11, 2011
Assignee: International Business Machines Corporation
Inventors: Dimitri Kanevsky, Dmitri V. Talapin

Device comprising doped nano-component

Patent number: 7982274
Abstract: A device comprising a doped semiconductor nano-component and a method of forming the device are disclosed. The nano-component is one of a nanotube, nanowire or a nanocrystal film, which may be doped by exposure to an organic amine-containing dopant. Illustrative examples are given for field effect transistors with channels comprising a lead selenide nanowire or nanocrystal film and methods of forming these devices.
Type: Grant
Filed: May 30, 2008
Issued: July 19, 2011
Assignee: International Business Machines Corporation

Inventors: Ali Afzali-Ardakani, Cherie R. Kagan, Christopher B. Murray, Robert L. Sandstrom, Dmitri V. Talapin

Method for fabricating an inorganic nanocomposite

Patent number: 7964481
Abstract: An inorganic nanocomposite is prepared by obtaining a solution of a soluble hydrazine-based metal chalcogenide precursor; dispersing a nanoentity in the precursor solution; applying a solution of the precursor containing the nanoentity onto a substrate to produce a film of the precursor containing the nanoentity; and annealing the film of the precursor containing the nanoentity to produce the metal chalcogenide nanocomposite film comprising at least one metal chalcogenide and at least one molecularly-intermixed nanoentity on the substrate. The process can be used to prepare field-effect transistors and photovoltaic devices.
Type: Grant
Filed: April 14, 2009
Issued: June 21, 2011
Assignee: International Business Machines Corporation
Inventors: David B. Mitzi, Christopher B. Murray, Dmitri V. Talapin

Verification of a biometric identification

Patent number: 7878412
Abstract: An identification verification system includes a combination of indicia that represent measurable characteristics mapped into a characteristic signature, and an indicia detector for detecting the characteristic signature and verifying authenticity of the characteristic signature.
Type: Grant
Filed: August 5, 2009
Issued: February 1, 2011
Assignee: International Business Machines Corporation
Inventors: Dimitri Kanevsky, Dmitri V. Talapin

Verification of a biometric identification

Patent number: 7607584
Abstract: An identification verification system includes a combination of indicia that represent measurable characteristics mapped into a characteristic signature, and an indicia detector for detecting the characteristic signature and verifying authenticity of the characteristic signature.
Type: Grant
Filed: April 26, 2006
Issued: October 27, 2009
Assignee: International Business Machines Corporation
Inventors: Dimitri Kanevsky, Dmitri V. Talapin

Chemical doping of nano-components

Patent number: 7582534
Abstract: A method is provided for doping nano-components, including nanotubes, nanocrystals and nanowires, by exposing the nano-components to an organic amine-containing dopant. A method is also provided for forming a field effect transistor comprising a nano-component that has been doped using such a dopant.
Type: Grant
Filed: November 18, 2004
Issued: September 1, 2009
Assignee: International Business Machines Corporation
Inventors: Ali Afzali-Ardakani, Phaedon Avouris, Jia Chen, Christian Klinke, Christopher B. Murray, Dmitri V. Talapin

Method for fabricating an inorganic nanocomposite

Patent number: 7517718
Abstract: An inorganic nanocomposite is prepared by obtaining a solution of a soluble hydrazine-based metal chalcogenide precursor; dispersing a nanoentity in the precursor solution; applying a solution of the precursor containing the nanoentity onto a substrate to produce a film of the precursor containing the nanoentity; and annealing the film of the precursor containing the nanoentity to produce the metal chalcogenide nanocomposite film comprising at least one metal chalcogenide and at least one molecularly-intermixed nanoentity on the substrate. The process can be used to prepare field-effect transistors and photovoltaic devices.
Type: Grant
Filed: January 12, 2006
Issued: April 14, 2009
Assignee: International Business Machines Corporation
Inventors: David B. Mitzi, Christopher B. Murray, Dmitri V. Talapin

Device comprising doped nano-component and method of forming the device

Patent number: 7405129
Abstract: A device comprising a doped semiconductor nano-component and a method of forming the device are disclosed. The nano-component is one of a nanotube, nanowire or a nanocrystal film, which may be doped by exposure to an organic amine-containing dopant. Illustrative examples are given for field effect transistors with channels comprising a lead selenide nanowire or nanocrystal film and methods of forming these devices.
Type: Grant
Filed: May 26, 2005
Issued: July 29, 2008
Assignee: International Business Machines Corporation

Inventors: Ali Afzali-Ardakani, Cherie R. Kagan, Christopher B. Murray, Robert L. Sandstrom, Dmitri V. Talapin

List of all patents:

Colloidal ternary group III-V nanocrystals synthesized in molten salts
Inventors: Dmitri V Talapin, Vishwas Srivastava
Publication date: 2022/2/15
Patent office: US
Patent number: 11247914
Application number: 16452949

Photosensitive, inorganic ligand-capped inorganic nanocrystals
Inventors: Dmitri V Talapin, Yuanyuan Wang, Jia-ahn Pan, Haoqi Wu
Publication date: 2022/1/13
Patent office: US
Application number: 17283457

Colloids of inorganic nanocrystals in molten media and related methods
Inventors: Dmitri V Talapin, Hao Zhang, Vishwas Srivastava
Publication date: 2021/6/22
Patent office: US
Patent number: 11040323
Application number: 15772950

Patent No: US 11,247,914
Title: Colloidal Ternary Group III-V Nanocrystals Synthesized in Molten Salts
Inventors: Vishwas Srivastava and Dmitri Talapin

Photoactive, inorganic ligand-capped inorganic nanocrystals
DV Talapin, W Yuanyuan, H Zhang
US Patent App. 16/604,045

Colloidal ternary group iii-v nanocrystals synthesized in molten salts
DV Talapin, V Srivastava
US Patent App. 16/452,949

Materials and methods for the preparation of nanocomposites
A Nag, DV Talapin
US Patent 10,600,865

Halometallate ligand-capped semiconductor nanocrystals
J Kurley, H Zhang, DV Talapin, J Russell, MH Hudson

US Patent 10,541,134

Backlight unit including anisotropic semiconductor nanocrystal particles, production method thereof, and electronic device including the same
AK Hyun, DV Talapin, PD Cunningham, EJ Jang
US Patent 10,234,723

Colloids of inorganic nanocrystals in molten media and related methods
DV Talapin, H Zhang, V Srivastava
US Patent App. 15/772,950

Materials and methods for the preparation of nanocomposites
A Nag, DV Talapin
US Patent 9,882,001

Materials and methods for the preparation of nanocomposites
DV Talapin, MV Kovalenko, J Lee, C Jiang
US Patent 9,346,998

Powdered Materials Attached with Molecular Glue
CT Ballinger, B Poudel, D Talapin, JS Son
US Patent App. 14/695,425

Nano-encoding and decoding information related to printed texts and images on paper and other surfaces
D Kanevsky, DV Talapin
US Patent 8,139,901

Method and system for nano-encoding and decoding information related to printed texts and images on paper and other surfaces
D Kanevsky, DV Talapin
US Patent 8,036,415

Device comprising doped nano-component
A Afzali-Ardakani, CR Kagan, CB Murray, RL Sandstrom, DV Talapin
US Patent 7,982,274

Method for fabricating an inorganic nanocomposite
DB Mitzi, CB Murray, DV Talapin
US Patent 7,964,481

Verification of a biometric identification
D Kanevsky, DV Talapin
US Patent 7,878,412

Chemical doping of nano-components

A Afzali-Ardakani, P Avouris, J Chen, C Klinke, CB Murray, DV Talapin
US Patent App. 12/551,310

Verification of a biometric identification
D Kanevsky, DV Talapin
US Patent 7,607,584

Chemical doping of nano-components
A Afzali-Ardakani, P Avouris, J Chen, C Klinke, CB Murray, DV Talapin
US Patent 7,582,534

Method for fabricating an inorganic nanocomposite
DB Mitzi, CB Murray, DV Talapin
US Patent 7,517,718

Device comprising doped nano-component and method of forming the device
A Afzali-Ardakani, CR Kagan, CB Murray, RL Sandstrom, DV Talapin
US Patent 7,405,129

Method for the preparation of IV-VI semiconductor nanoparticles
K Cho, W Gaschler, CB Murray, D Talapin
US Patent 7,208,133