



# Chee Yeow Meng

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## KEY WORDS

Coding theory, combinatorial design theory, extremal set systems, electronic design automation

## BIOGRAPHY

Yeow Meng Chee received his PhD degree in computer science from the University of Waterloo in 1996. He is currently Professor and Dean in the College of Science, Nanyang Technological University. Prior to this, he was Program Director of Interactive Digital Media R&D in the Media Development Authority of Singapore, Postdoctoral Fellow at the University of Waterloo and IBM Zürich Research Lab, and Deputy Director of Strategic Programs at the Infocomm Development Authority, Singapore..

## RESEARCH INTEREST

My research interest lies in the interplay between combinatorics and computer science/engineering, particularly combinatorial design theory, coding theory, extremal set systems, and electronic design automation.

## RELEVANT PUBLICATIONS

Y. M. Chee, T. Etzion, H. M. Kiah, and A. Vardy, "Cooling codes: Thermal-management coding for high-performance interconnects," IEEE Transactions on Information Theory, vol. 64, no. 4, pp. 3062–3085, 2018.  
<http://fse2013.spms.ntu.edu.sg/~ymchee/papers/cooljournal.pdf> Y. M. Chee, H. M. Kiah, S. Ling, and H. Wei, "Geometric orthogonal codes of size larger than optical orthogonal codes," IEEE Transactions on Information Theory, vol. 64, no. 4, pp. 2883–2895, 2018.  
<http://fse2013.spms.ntu.edu.sg/~ymchee/papers/GOCOOC.pdf> Y. M. Chee and X. Zhang, "Linear size constant-composition codes meeting the Johnson bound," IEEE Transactions on Information Theory, vol. 64, no. 2, pp. 909–917, 2018.  
<http://fse2013.spms.ntu.edu.sg/~ymchee/papers/linearjohnson.pdf> Y. M. Chee, H. M. Kiah, H. Zhang, and X. Zhang, "Constructions of optimal and near-optimal multiply constant-weight codes," IEEE Transactions on Information Theory, vol. 63, no. 6, pp. 3621–3629, 2017.  
<http://fse2013.spms.ntu.edu.sg/~ymchee/papers/MCWC.pdf> Y. M. Chee, H. M. Kiah, P. Purkayastha, and P. Solé, "Product construction of affine codes," SIAM Journal on Discrete Mathematics, vol. 29, no. 3, pp. 1540–1552, 2015.  
<http://fse2013.spms.ntu.edu.sg/~ymchee/papers/productaffine.pdf>



# Chiba Shunsuke

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## KEY WORDS

organic radicals, hydrogen  
transfer, metal hydrides,  
nitrogen-heterocycles

## BIOGRAPHY

Shunsuke Chiba earned his Ph.D. in Prof. Koichi Narasaka's group at the University of Tokyo. He joined the faculty of Nanyang Technological University (NTU), Singapore in 2007, where his research group has focused on methodology development in the area of synthetic chemistry and catalysis.

## RESEARCH INTEREST

methodology development in the area of synthetic chemistry and catalysis.

## RELEVANT PUBLICATIONS

1) "Use of Alkyl Ethers as Traceless Hydride Donors in Brønsted Acid-Catalyzed Intramolecular Hydrogen Atom Transfer", Dhika Aditya Gandamana, Bin Wang, Ciputra Tejo, Benoit Bolte, Fabien Gagosz and Shunsuke Chiba, *Angew. Chem. Int. Ed.* 2018, 57, 6181. 2) "Nucleophilic Amination of Methoxy Arenes Promoted by a Sodium Hydride/Iodide Composite", Atsushi Kaga, Hirohito Hayashi, Hiroyuki Hakamata, Miku Oi, Masanobu Uchiyama, Ryo Takita, and Shunsuke Chiba, *Angew. Chem. Int. Ed.* 2017, 56, 11807. 3) "Amide-Directed C-H Sodiation by a Sodium Hydride-Iodide Composite", Yinhua Huang, Guo Hao Chan, and Shunsuke Chiba, *Angew. Chem. Int. Ed.* 2017, 56, 6544. 4) "Hydrodehalogenation of Haloarenes by a Sodium Hydride-Iodide Composite", Derek Yiren Ong, Ciputra Tejo, Kai Xu, Hajime Hirao, and Shunsuke Chiba, *Angew. Chem. Int. Ed.* 2017, 56, 1840. 5) "Hydride Reduction by Sodium Hydride-Iodide Composite", Pei Chui Too, Guo Hao Chan, Ya Lin Tnay, Hajime Hirao, and Shunsuke Chiba, *Angew. Chem. Int. Ed.* 2016, 55, 3719.



# Czarny Bertrand

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## KEY WORDS

nanomedicine,  
nanoparticles, preclinical  
study, drug delivery  
systems,

## BIOGRAPHY

Dr Bertrand CZARNY joined the French governmental agency CEA in 2001, and received his Ph.D. degree on structural and functional engineering of biomolecules from the University of Paris Descartes. As a postdoctoral researcher at Utrecht University (UU) Netherlands, he accepted an opportunity to be assigned in Singapore, as a Visiting Senior scientist at the National University of Singapore (NUS) and then joined the Nanyang Technical University (NTU) in MSE.

## RESEARCH INTEREST

My research is focused on the development of nanomedicines to treat inflammatory diseases (cardiovascular and neurological disease principally), with large emphasis on in vivo pre-clinical studies. In collaborations with clinicians from different hospitals or institutes in Singapore, my research is highly translational, and is broadly applicable to many pathological conditions. The goal is to choose nanomaterials in relation to the drug and the disease and develop nanomedicines with high efficacy and safety profiles.

## RELEVANT PUBLICATIONS

Wong CW\*, Czarny B\*, Metselaar J, Ho C, Ng SR, Veluchamy AB, Storm G, and Wong T Evaluation of subconjunctival liposomal steroids for the treatment of experimental uveitis Scientific report April 2018 Apr 26;8(1):6604. doi: 10.1038/s41598-018-24545-2. <https://www.ncbi-nlm-nih.gov.ezlibproxy1.ntu.edu.sg/pmc/articles/PMC5919899/>  
Goh WJ, Ong WY, Torta F, Schiffelers RM, Storm G, Czarny B\*, Giorgia Pastorin\*. Bioinspired Cell-Derived Nanovesicles versus Exosomes as Drug Delivery Systems: A Cost-Effective Alternative, Scientific Reports, 2017.Oct 30;7(1):14322. doi: 10.1038/s41598-017-14725-x. <https://www.ncbi-nlm-nih.gov.ezlibproxy1.ntu.edu.sg/pmc/articles/PMC5662560/>  
Allijn IE\*, Czarny BM\*, Wang X, Chong SY, Weiler M, da Silva AE, Metselaar JM, Lam CS, Pastorin G, de Kleijn DP, Storm G, Wang JW, Schiffelers RM. Liposome encapsulated berberine treatment attenuates cardiac dysfunction after myocardial infarction. J Control Release. January 2017 Feb 10;247:127-133. doi: 10.1016/j.jconrel.2016.12.042. Epub 2017 Jan 5. [https://linkinghub-elsevier-com.ezlibproxy1.ntu.edu.sg/retrieve/pii/S0168-3659\(16\)30759-3](https://linkinghub-elsevier-com.ezlibproxy1.ntu.edu.sg/retrieve/pii/S0168-3659(16)30759-3)  
Czarny B, Georgin D, Berthon F, Plastow G, Pinault M, Patriarche G, Thuleau A, Mayne-L'Hermite M, Taran F and Dive V, Carbon nanotube translocation to distant organs after pulmonary exposition: insights from in situ <sup>14</sup>C radiolabelling and tissue radioimaging. ACS Nano, 2014.Jun 24;8(6):5715-24. doi: 10.1021/nn500475u. Epub 2014 May 28. <https://pubs-acsc-org.ezlibproxy1.ntu.edu.sg/doi/10.1021/nn500475u>



# Dumke Rainer

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## BIOGRAPHY

Rainer Dumke studied Physics at the Leibniz University in Hanover / Germany and received his Dr. rer. nat. (PhD) in 2003. The title of the theses was Atom Optic and Quantum Information Processing With Micro Structured Optical Elements. During his PhD he worked for half a year at the National Institute for Standard and Technologies (NIST, Gaithersburg USA) on ultra cold Rydberg atoms. After finishing his PhD in Hanover he received a prestige Fellowship from the Alexander von Humboldt foundation. In 2003 he went again to NIST (Gaithersburg, USA) to continue research in the same group in the field of ultra cold molecules and quantum degenerate gases. After two years in September 2005 Rainer Dumke started a new research position at the Max Planck Research Group in Erlangen, Germany. Here he focused on the realization of an optical atomic clock based on an ultra cold trapped single Indium ion. In September 2006 he came to Singapore and worked in the new established School of Physical and Mathematical Sciences in the Division of Physics and Applied Physics at the Nanyang Technological University. During his career his achievements included: Analysis of wave packets in an optical lattice. Investigating the formation of Rydberg atoms in an ultra cold plasma. First generation and application of an optical micro structure for a guided atom interferometer. First demonstration of the application of micro optical systems for quantum information processing. Studying the coherence properties of guided-atom interferometers. Sub-natural-linewidth quantum interference features: Atom-Molecule Coherence. All optical generation and photoassociative probing of sodium Bose-Einstein condensates. Development towards an optical frequency standard in the deep UV. His achievements are well documented in numerous publications.

## RESEARCH INTEREST

The investigation and utilization of wave properties of atomic matter is of great interest in fundamental as well as in applied physics. Due to the recent progress in the control of ultra cold atomic matter, there is now a major effort to develop compact and fully integrated Atom-Chip devices. These systems will be suitable for a broad spectrum of applications ranging from Bose-Einstein condensation, atom interferometry, quantum information processing to high precision measurements.

## RELEVANT PUBLICATIONS

Muller T (Mueller, T.)<sup>1,2</sup>, Wu X (Wu, X.)<sup>1</sup>, Mohan A (Mohan, A.)<sup>1</sup>, Eyvazov A (Eyvazov, A.)<sup>1</sup>, Wu Y (Wu, Y.)<sup>1</sup>, Dumke R (Dumke, R.)<sup>1</sup>. (2008). Towards A Guided Atom Interferometer Based on a Superconducting Atom Chip. New Journal of Physics, 10(073006).



# Gao Weibo

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## KEY WORDS

Quantum information, solid state physics

## BIOGRAPHY

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Postdoctoral research (Marie-Curie fellowship)  
ETH, Zurich, Switzerland  
Principal investigator: Prof. Atac Imamoglu

Master & PhD Univ of Science & Technology of China 2010  
BSc Univ of Science & Technology of China 2005

## RESEARCH INTEREST

We are interested in quantum information and quantum optics research based on solid state systems. On one side, we are studying versatile systems including SiV defect in diamond, SiC color center not only bring rich physics, but can also find their applications in quantum information. On the other side, we are interested in the light-matter interaction in 2D material, perovskite systems and their exciton behaviors under low temperature and strong magnetic environment.

## RELEVANT PUBLICATIONS

2018 Room-temperature solid state quantum emitters in the telecom range. Science Advances 4, 3, eaar3580 (2018). Highlighted by Nature Nanotechnology. Yu Zhou, Ziyu Wang, Abdullah Rasmita, Sejeong Kim, Amanuel Berhane, Zoltan Bodrog, Giorgio Adamo, Adam Gali, Igor Aharonovich, Wei-bo Gao Microsecond dark-exciton valley polarization memory in 2D heterostructures Nature Communications 9, 753 (2018). Highlighted by Nature Communications. Chongyun Jiang, Weigao Xu, Abdullah Rasmita, Zumeng Huang, Ke Li, Qihua Xiong, Wei-bo Gao 2017 Zeeman splitting via spin-valley-layer coupling in bilayer MoTe2 Nature Communications 8, 802 (2017) Chongyun Jiang, Fucai Liu, Jorge Cuadra, Zumeng Huang, Ke Li, Ajit Srivastava, Zheng Liu, and Wei-bo Gao Self-protected nanoscale thermometry based on spin defects in silicon carbide. Phys. Rev. Applied 8, 044015 (2017) Yu Zhou, Junfeng Wang, Xiaoming Zhang, Ke Li, Jianming Cai, Wei-bo Gao Efficient Generation of an Array of Single Silicon-Vacancy Defects in Silicon Carbide Phys. Rev. Applied 7, 064021 (2017) Junfeng Wang, Yu Zhou, Xiaoming Zhang, Fucai Liu, Yan Li, Ke Li, Zheng Liu, Guanzhong Wang, Weibo Gao Correlated fluorescence blinking in two-dimensional semiconductor heterostructures Nature 541, 62–67 (2017) Xu, Weigao, Weiwei Liu, Jan F. Schmidt, Weijie Zhao, Xin Lu, Timo Raab, Carole Diederichs, Weibo Gao, Denis V. Seletskiy, and Qihua Xiong. Coherent control of a strongly driven silicon vacancy optical transition in diamond Yu Zhou, Abdullah Rasmita, Ke Li, Qihua Xiong, Igor Aharonovich, Wei-bo Gao Nature Communication 8, 14451 (2017)





# Goto Atsushi

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## KEY WORDS

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## BIOGRAPHY

Atsushi Goto is an Associate Professor and Deputy Head (CBC) in SPMS, NTU. He received his Ph.D (2001) in Kyoto University, Japan. He was appointed to an instructor (2001), an assistant professor (2002-2010) and an associate professor (2010-2015) in Institute for Chemical Research, Kyoto University, Japan. He moved to NTU in 2015. His research interests include polymer chemistry and polymer materials, particularly related to controlled synthesis of polymers.

## RESEARCH INTEREST

Polymer Chemistry and Polymer Materials

- 1) Controlled syntheses of polymers
- 2) Development of new living radical polymerization via organic catalysis
- 3) Creation of new advance polymer materials using structurally controlled polymers

## RELEVANT PUBLICATIONS

J. Zheng, C. G. Wang, Y. Yamaguchi, M. Miyamoto, A. Goto. (2018). Temperature-Selective Dual Radical Generation from Alkyl Diiodide: Applications to Synthesis of Asymmetric CABC Multi-Block Copolymers and Their Unique Assembly Structures. *Angewandte Chemie International Edition*, 57, 1552-1556.

C. G. Wang, A. Goto. (2017). Solvent-Selective Reactions of Alkyl Iodide with Sodium Azide for Radical Generation and Azide Substitution and Their Application to One-Pot Synthesis of Chain-End Functionalized Polymers. *Journal of the American Chemical Society*, 139, 10551-10560.

C. Chen, L. Xiao, A. Goto. (2016). Comprehensive Study on Chain-End Transformation of Polymer-Iodides with Amines for Synthesizing Various Chain-End Functionalized Polymer. *Macromolecules*, 49, 9425-9440.

A. Ohtsuki, L. Lei, M. Tanishima, A. Goto, H. Kaji. (2015). Photo-Controlled Organocatalyzed Living Radical Polymerization Feasible over a Wide Range of Wavelengths. *Journal of the American Chemical Society*, 137, 5610-5617.

A. Goto, A. Ohtsuki, H. Ohfuji, M. Tanishima, H. Kaji. (2013). Reversible Generation of a Carbon-Centered Radical from Alkyl Iodide Using Organic Salts and Their Application as Organic Catalysts in Living Radical Polymerization. *Journal of the American Chemical Society*, 135, 11131-11139.



# Hsia K Jimmy

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## KEY WORDS

Micro/nano mechanics,  
soft matter, responsive  
materials, soft robotics,  
living materials, cells,  
plants

## BIOGRAPHY

K. Jimmy Hsia is Professor of Mechanical Engineering in the School of Mechanical and Aerospace Engineering, and Dean of Graduate College at NTU. He received his B.S. from Tsinghua University, China, and his Ph.D. from MIT. He is the recipient of the Max-Planck Society Scholarship, and Japan Society for Promotion of Science Fellowship. Before joining NTU, Hsia was Vice Provost for International Programs and Strategy, and Professor of Mechanical Engineering and Biomedical Engineering at CMU.

## RESEARCH INTEREST

Hsia's research interest are in mechanical behaviours of materials at micro/nano scales, mechanical behaviours of living systems such as cells and plants, and mechanics of soft materials. He has published more than 100 papers in peer-reviewed journals. His papers have been featured as cover articles in journals such as PNAS, Advanced Materials, Nano Research, Extreme Mechanics Letters, etc.

## RELEVANT PUBLICATIONS

Stephen Coyle, Carmel Majidi, Philip LeDuc, K. Jimmy Hsia, "Bio-inspired Soft Robotics: Material Selection, Actuation, and Design", *Extreme Mechanics Letters*, 22, 51-59, DOI: 10.1016/j.eml.2018.05.003, 2018. Arif M. Abdullah, Xiuling Li, Paul V. Braun, John Rogers and K. Jimmy Hsia, "Self-folded Gripper-like Architectures from Stimuli-responsive Bilayers", *Advanced Materials*, DOI: 10.1002/adma.201801669 (1-9), 2018. Changjin Huang, David Quinn, Subra Suresh and K. Jimmy Hsia, "Controlled molecular self-assembly of complex three-dimensional structures in soft materials", *Proceedings of the National Academy of Sciences*, 115:1, 70-74, DOI: 10.1073/pnas.1717912115, 2018. Changjin Huang, David Quinn, Yoel Sadovsky, Subra Suresh, K. Jimmy Hsia, "Size Analysis of Self-Assembled Vesicles", *Proceedings of the National Academy of Sciences*, 114:11, 2910-2915, DOI:10.1073, 2017. Danielle Joaquin, Michael Grigola, Gubeum Kwon, Christopher Blasius, Yutao Han, Daniel Perlitz, Jing Jiang, Yvonne Ziegler, Ann Nardulli, K. Jimmy Hsia, "Cell Migration and Organization in Three-Dimensional in vitro Culture Driven by Stiffness Gradient", *Biotechnology & Bioengineering*, 113: 2496-2506, doi:10.1002/bit.26010, 2016.



# Leong Weng Kee

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## KEY WORDS

Organometallic; clusters; bioorganometallic; catalysis; nanoscience

## BIOGRAPHY

Age 58. BA, MA, Natural Sciences (Cambridge, 1982), Dip Ed (NIE, Singapore, 1985), MSc, Chemistry (NUS, 1991), PhD (Simon Fraser University, Canada, 1995), ScD (Cambridge, 2015). FSNIC, FRSC, Member ACS. Worked as secondary school and junior college teacher; development chemist with GSK (then Glaxo Development(S) Pte Ltd); teaching fellow, assistant professor associate professor in NUS. Moved to NTU in 2009. has served as deputy head, university board of discipline and senate chair.

## RESEARCH INTEREST

Professor Leong's main research area is organometallic chemistry, particularly organometallic cluster chemistry, and includes: (a) Development of novel organometallic cluster chemistry, (b) Bioorganometallic chemistry especially of clusters, (c) Mechanistic studies in catalysis and bond activation, and (d) Organometallic clusters in nanoscience and nanomaterials.

## RELEVANT PUBLICATIONS

1. C. kr Barik, R. Ganguly, Y. Li and W.K. Leong. Structural Mimics of the [Fe]-Hydrogenase: A Complete Set for the Group VIII Metals. *Inorg. Chem.* 2018, 57, 7113-7120. 2. Y. Li and W.K. Leong. Intramolecular Cycloaddition in the Iridium Diyne Complexes  $[\text{Cp}^*\text{Ir}(\text{CO})(\eta^2\text{-ArC}\equiv\text{CC}\equiv\text{CAR})]$ : An Experimental and Computational Study. *Eur. J. Inorg. Chem.* 2016, 4769-73. 3. Z. Lam, G. Balasundaram, K.V. Kong, B.Y. Chor, D. Goh, B. Khezri, R.D. Webster, W.K. Leong and M. Olivo. High Nuclearity Carbonyl Clusters as Near-IR Contrast Agents for Photoacoustic In Vivo Imaging. *J. Mat. Chem. B* 2016, 4, 3886-91. 4. Z. Lam, K.V. Kong, M. Olivo and W.K. Leong. The Vibrational Spectroscopy of Metal Carbonyls for Bio-Imaging and -Sensing. *Analyst* 2016, 141, 1569-86. 5. K.V. Kong, W.K. Leong and L.H.K. Lim. Osmium carbonyl clusters containing labile ligands induce apoptosis via the hyper-stabilization of microtubules. *Chem. Res. Toxicol.* 2009, 22, 1116-22.





# Li Shuzhou

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## KEY WORDS

Computational Material Science, Assembly of Nanoparticle, Surface-Enhanced Raman Scattering, CO<sub>2</sub> Reduction, Plasmonics, Machine Learning

## BIOGRAPHY

Dr. Li Shuzhou received his B.Sc, M.Sc, and PhD in chemistry from Nankai University, Peking University, and University of Wisconsin, respectively. After studying plasmonics in Northwestern University as a postdoc, he joined in Nanyang Technological University. Currently, he is an associate professor in school of materials science and engineering and his research interests are theoretical and computational material science.

## RESEARCH INTEREST

Dr. Li's research interests are theoretical and computational material science. He has been focused on (1) Assembly of nanostructures; (2) design high sensitive substrates for surface enhanced Raman scattering and fluorescence; (3) optical properties of metal-semiconductor nanostructure.

<http://www.ntu.edu.sg/home/lisz/>

## RELEVANT PUBLICATIONS

Valence Electron Density-Dependent Pseudopermittivity for Nonlocal Effects in Optical Properties of Metallic Nanoparticles, C. Chen, and S. Li, ACS Photonics, 5, 2295, (2018) Crystal Phase-based Epitaxial Growth of Hybrid Noble Metal Nanostructures on 4H/fcc Au Nanowires, Q. Lu, A. Wang, Y. Gong, W. Hao, H. Cheng, J. Chen, B. Li, N. Yang, W. Niu, J. Wang, Y. Yu, X. Zhang, Y. Chen, Z. Fan, X. Wu, J. Chen, J. Luo, S. Li, L. Gu, and H. Zhang, Nat. Chem., 10, 456, (2018) Solution Adsorption Formation of a  $\pi$ -conjugated Polymer/Graphene Composite for High-Performance Field-Effect Transistors, Y. Liu, W. Hao, H. Yao, S. Li, Y. Wu, J. Zhu, and L. Jiang, Adv. Mater., 30, 1705377, (2018) Quantitative Prediction of Positron and Orientation for Platonic Nanoparticles at Liquid/Liquid Interfaces, W. Shi, Z. Zhang, and S. Li, J. Phys. Chem. Lett, 9, 373, (2018) Ultrahigh Enhancement of Electromagnetic Fields by Excitatory Localized with Extended Surface Plasmons, A. Li, S. Isaacs, I. Abdulhalim, and S. Li\*, J. Phys. Chem. C, 119, 19382, (2015)



# Liedberg Bo Gunnar

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## BIOGRAPHY

Bo Liedberg is full professor of Sensor Science and Molecular Physics (2000- ), at the Department of Physics, Chemistry and Biology, Linköping University, Sweden. Liedberg is also the head of the scientific branch Applied Physics which encompasses seven research divisions at the Department. His research is primarily devoted to soft materials science including surface chemistry, self-assembly, supramolecular chemistry and biomimetics.

## RESEARCH INTEREST

The research interests of Prof. Bo Liedberg can be divided into three main areas:

- Surface Chemistry and Self Assembled Monolayers  
This part of the research concerns fundamental studies of adsorbates and ultrathin molecular architectures, like Self-Assembled Monolayers (SAMs), on solid supports.
- Bioinspired and Biomimetic Nanoscience  
This research concerns the development of nanoscale architectures fabricated using either top-down or bottom-up protocols (or a combination of both).
- Optical Biosensors, micro- and nanoarrays  
The group has a long experience in developing optical transducers for biosensing application. We were the first to demonstrate the use of surface plasmon resonance for studies of bioaffinity interactions at surfaces, a technology that today form the backbone in SPR/Biacore instruments developed for biospecific interaction analysis (BIA)

## RELEVANT PUBLICATIONS

Cheng Zhou, Geraldine W.N. Chia, James C.S. Ho, Thomas Seviour, Talgat Sailov, Bo Liedberg, Staffan Kjelleberg, Jamie Hinks\* and Guillermo C. Bazan\*. (2018). Informed Molecular Design of Conjugated Oligoelectrolytes to Increase Cell Affinity and Antimicrobial Activity. *Angewandte Chemie International Edition*, .  
Y.Z. Shi, S. Xiong, Y. Zhang, L.K. Chin, Y.-Y. Chen, J.B. Zhang, T.H. Zhang, W. Ser, A. Larson, L.S. Hoi, J.H. Wu, T.N. Chen, Z.C. Yang, Y.L. Hao, B. Liedberg, P.H. Yap, D.P. Tsai, C.-W. Qiu & A.Q. Liu. (2018). Sculpting nanoparticle dynamics for singlebacteria-level screening and direct bindingefficiency measurement. *Nature Communications*, 9, DOI: 10.1038/s41467-018-03156-5.  
Yuzhi Shi, Sha Xiong, Lip Ket Chin, Jingbo Zhang, Wee Ser, Jiuhui Wu, Tianning Chen, Zhenchuan Yang, Yilong Hao, Bo Liedberg, Peng Huat Yap, Din Ping Tsai, Cheng-Wei Qiu, Ai Qun Liu. (2018). Nanometer-precision linear sorting with synchronized optofluidic dual barriers. *Science Advances*, 4, eaao0773.



# Liew Timothy C H

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## KEY WORDS

Light-Matter Coupling in  
Nanostructures Exciton-  
Polaritons Polariton Quantum  
Optics Unconventional  
Blockade Topological  
Polaritons Bosonic Cascade  
Lasers Polariton Neurons  
Spin Sensitive Phenomena in  
Polaritonic Systems  
Nonlinear Optical Spin Hall  
Effect Non-equilibrium Bose-  
Einstein Condensates

## BIOGRAPHY

Timothy Liew completed his PhD at the University of Southampton, UK. He worked as a postdoctoral fellow in Singapore and Switzerland (EPFL, Lausanne), and was awarded Marie-Curie and Lee Kuan Yew fellowships. He joined Nanyang Technological University in 2015 as a Nanyang Assistant Professor.

## RESEARCH INTEREST

Timothy Liew works on the theory of hybrid light-matter coupled systems and is interested in the development of polaritonic devices. He has predicted fundamental effects such as the unconventional blockade and topological polaritons, which have recently been confirmed experimentally. He has also proposed using polaritonic systems for high-efficiency terahertz frequency sources, quantum light sources, and complete architectures of photonic circuits.

## RELEVANT PUBLICATIONS

“Quantum exciton-polariton networks through inverse four-wave mixing”, T. C. H. Liew, & Y. G. Rubo, Phys. Rev. B, 97, 041302(R) (2018)  
<https://journals.aps.org/prb/abstract/10.1103/PhysRevB.97.041302> “Spontaneous and superfluid chiral edge states in exciton-polariton condensates”, H. Sigurdsson, G. Li, & T. C. H. Liew, Phys. Rev. B, 96, 115453 (2017)  
<https://journals.aps.org/prb/abstract/10.1103/PhysRevB.96.115453> “Chiral Bogoliubov excitations in nonlinear bosonic systems”, C.-E. Bardyn, T. Karzig, G. Refael, and T. C. H. Liew, Phys. Rev. B 93, 020502(R) (2016).  
<https://journals.aps.org/prb/abstract/10.1103/PhysRevB.93.020502> “Perceptrons with Hebbian learning based on wave ensembles in spatially patterned potentials”, T. Espinosa-Ortega and T. C. H. Liew, Phys. Rev. Lett. 114, 118101 (2015).  
<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.114.118101> “Observation of non-Hermitian degeneracies in a chaotic exciton-polariton billiard”, T. Gao, E. Estrecho, K. Y. Bliokh, T. C. H. Liew, M. D. Fraser, S. Brodbeck, M. Kamp, C. Schneider, S. Höfling, Y. Yamamoto, F. Nori, Y. S. Kivshar, A. G. Truscott, R. G. Dall, & E. A. Ostrovskaya, Nature, 526, 554 (2015)  
<https://www.nature.com/articles/nature15522>



# Lim Sierin

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## KEY WORDS

protein, nanocages, cellulose, enzymes, materials, bionanotechnology, biotechnology, supramolecular assembly, biointerface, emulsion, skin

## BIOGRAPHY

Sierin Lim earned her B.S. in Chemical Engineering and Ph.D. in Biomedical Engineering from University of California Los Angeles (UCLA) and did a postdoc at University of California Irvine. Her Bioengineered and Applied Nanomaterials Laboratory (BeANs Lab) at NTU focuses on the design and engineering of hybrid nano/microscale devices from biological parts by utilizing protein engineering as a tool for applications in medicine, electronics, cosmetics, and food.

## RESEARCH INTEREST

design and engineering of self-assembling hybrid supramolecular structures composed of biomolecules (i.e. protein and carbohydrate/lipid) as carriers of active ingredients and formulation in consumer products (e.g. food and cosmetics). <http://www.ntu.edu.sg/home/slim>.

## RELEVANT PUBLICATIONS

1. Pasula R, Lim S\* (2017) Engineering Nanoparticle Synthesis in Microbial Factories, *Engineering Biology*, 1(1):12–17. <http://digital-library.theiet.org/content/journals/10.1049/enb.2017.0009>
2. Bhaskar S, Lim S\* (2017) Engineering Protein Nanocages as Carriers for Biomedical Applications, *NPG Asia Materials*, 9(4):e371. <https://www.nature.com/articles/am2016128>
3. Sarker M, Tomczak N\*, Lim S\* (2017) Protein Nanocage as a pH-Switchable Pickering Emulsifier, *ACS Applied Materials and Interfaces*, 9(12):11193–11201. <https://pubs.acs.org/doi/abs/10.1021/acsami.6b14349>
4. Yu J, Huang T-R, Lim ZH, Luo R, Pasula RR, Liao LD, Lim S, Chen CC\* (2016) Production of Hollow Bacterial Cellulose Microspheres Using Microfluidics to Form an Injectable Porous Scaffold for Wound Healing, *Advanced Healthcare Materials*, 5(23):2983-2992. <https://onlinelibrary.wiley.com/doi/abs/10.1002/adhm.201600898>
5. Paramelle D\*, Peng T, Free P, Fernig DG, Lim S\*, Tomczak N\* (2016) Specific Internalisation of Gold Nanoparticles into Engineered Porous Protein Cages via Affinity Binding, *PLoS One* 11(9):e0162848. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0162848>



# Miserez Ali

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## KEY WORDS

Bioinspired engineering,  
nanomechanics,  
biomineralization, protein,  
x-ray, Raman spectroscopy,  
biofouling, bioadhesives

## BIOGRAPHY

Dr. Ali Miserez is an Associate Professor of Materials Science and Engineering at NTU. His research aims at revealing the molecular, physico-chemical, and structural principles of biological materials, and at translating these designs into novel biomimetic synthesis strategies. His work has been published in both general (Science, Nature Materials, Nature Biotechnology, Nature Chemical Biology, Advanced Materials) and specialized journals (Biomacromolecules, ACS Nano, JBC, Polym. Chem., etc).

## RESEARCH INTEREST

Bioinspired materials and biomimetics; nanomechanics; biomineralization; biomaterials transcriptomics; mechanics of hard and soft biomaterials; structural protein biochemistry; protein engineering applied to materials science; materials characterization by x-ray and vibrational spectroscopy; biofouling and water-resistant adhesives; protein-based supramolecular structures; liquid-liquid phase separation and coacervation (<http://www.ntu.edu.sg/home/ali.miserez/Research.html>).

## RELEVANT PUBLICATIONS

First or Leading Author Publications 1) Preventing Mussel Adhesion Using Liquid-Infused Materials, Science, vol. 357(6352), 668–673, 2017. 2) Supramolecular  $\beta$ -Sheets Stabilized Protein Nanocarriers for Drug Delivery and Gene Transfection. ACS Nano, vol. 11(5), 4528–4541, 2017. 3) An Underwater Surface-Drying Peptide Inspired by a Mussel Adhesive Protein. Advanced Functional Materials, vol. 26, 3496–3507, 2016. 4) Wet Adhesion of Mussel is Dictated by Molecular Conformation and Time-Regulated Secretion of Mussel Adhesive Proteins, Nature Communications, vol. 6, 8737, 2015. 5) The Role of Quasi-Plasticity in the Ultra Contact Damage Tolerance of the Stomatopod Dactyl Club, Nature Materials, vol.14, 943, 2015. 6) Infiltration of Chitin by Protein Coacervates Defines the Squid Beak Mechanical Gradient, Nature Chemical Biology, vol. 11(7), 488, 2015. 7) From Soft Self-Healing Gels to Stiff Films in Suckerin-Based Materials Through Modulation of Cross-Link Density and  $\beta$ -Sheet Content, Advanced Materials, vol. 27(26), pp. 3953–3961, 2015. 8) Accelerating the Design of Biomimetic Materials by Integrating RNA-seq with Proteomics and Materials Science, Nature Biotechnology, vol. 31, 908, 2013. 9) Non-Entropic and Reversible Long-Range Deformation of an Encapsulating Bioelastomer. vol(8), 910-916, Nature Materials, 2009. 10) The Transition from Stiff to Compliant Materials in Squid Beaks, Science, vol. 319, 1816, 2008.





# Phan Anh Tuan

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## KEY WORDS

biophysics; DNA and RNA structure; nucleic acid therapeutics; structural biology

## BIOGRAPHY

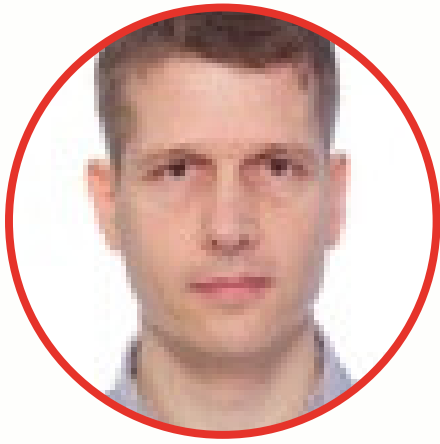
Dr Phan is a professor in the School of Physical and Mathematical Sciences, NTU. He obtained his PhD in Biophysics from École Polytechnique and has over 20 years of experience in structural and chemical manipulation of oligonucleotides. In 2014, he was elected as a Fellow of the American Physical Society for his contributions in understanding non-canonical nucleic acid motifs. In 2017, he has been awarded the NRF Investigatorship for the development of structure-enhanced antisense therapeutics.

## RESEARCH INTEREST

We use a combination of physical, chemical, biological, and computational methods to investigate and manipulate properties of nucleic acids.

## RELEVANT PUBLICATIONS

1) Lech CJ, Phan AT. Ball with hair: modular functionalization of highly stable G-quadruplex DNA nano-scaffolds through N2-guanine modification. *Nucleic Acids Res.* 2017 Jun 20;45(11):6265-6274. doi: 10.1093/nar/gkx243. 2) Heddi B, Cheong VV, Martadinata H, Phan AT. Insights into G-quadruplex specific recognition by the DEAH-box helicase RHAU: Solution structure of a peptide-quadruplex complex. *Proc Natl Acad Sci U S A.* 2015 Aug 4;112(31):9608-13. doi: 10.1073/pnas.1422605112. 3) Chung WJ, Heddi B, Schmitt E, Lim KW, Mechulam Y, Phan AT. Structure of a left-handed DNA G-quadruplex. *Proc Natl Acad Sci U S A.* 2015 Mar 3;112(9):2729-33. doi: 10.1073/pnas.1418718112. 4) Chung WJ, Heddi B, Hamon F, Teulade-Fichou MP, Phan AT. Solution structure of a G-quadruplex bound to the bisquinolinium compound Phen-DC(3). *Angew Chem Int Ed Engl.* 2014 Jan 20;53(4):999-1002. doi: 10.1002/anie.201308063. 5) Mukundan VT, Phan AT. Bulges in G-quadruplexes: broadening the definition of G-quadruplex-forming sequences. *J Am Chem Soc.* 2013 Apr 3;135(13):5017-28. doi: 10.1021/ja310251r.



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## KEY WORDS

Probability, stochastic  
calculus, point processes,  
mathematical finance and  
insurance, wireless  
networks.

## BIOGRAPHY

Nicolas Privault is a professor in the School of Physical and Mathematical Sciences at the Nanyang Technological University (NTU) in Singapore. His research expertise is in stochastic analysis and applications. Prior to joining NTU, he had been teaching at the universities of Evry, La Rochelle, and Poitiers in France

## RESEARCH INTEREST

Stochastic analysis and mathematical finance.

## RELEVANT PUBLICATIONS

Extended Mellin integral representations for the absolute value of the gamma function, *Analysis* 38 (2018) 11-20.  
[http://www.ntu.edu.sg/home/nprivault/papers/mellin\\_representation.pdf](http://www.ntu.edu.sg/home/nprivault/papers/mellin_representation.pdf) (with G. Serafin) Stein approximation for functionals of independent random sequences, *Electronic Journal of Probability* 23 (2018) No. 4, 34 pp.  
[http://www.ntu.edu.sg/home/nprivault/papers/random\\_sequences.pdf](http://www.ntu.edu.sg/home/nprivault/papers/random_sequences.pdf) (with X. Wei) Fast computation of risk measures for variable annuities with additional earnings by conditional moment matching, *ASTIN Bulletin - The Journal of the International Actuarial Association* 48 (2018) 171-196.  
[http://www.ntu.edu.sg/home/nprivault/papers/variable\\_annuities.pdf](http://www.ntu.edu.sg/home/nprivault/papers/variable_annuities.pdf) (with I. Flint, H.-B. Kong, P. Wang, and D. Niyato) Analysis of heterogeneous wireless networks using Poisson hard-core hole process, *IEEE Transactions on Wireless Communications* 16 (2017) 7152-7167.  
[http://www.ntu.edu.sg/home/nprivault/papers/poisson\\_hard\\_core.pdf](http://www.ntu.edu.sg/home/nprivault/papers/poisson_hard_core.pdf) (with Y. Liu) An integration by parts formula in a Markovian regime switching model and application to sensitivity analysis, *Stochastic Analysis and Applications* 35 (2017) 919-940.  
[http://www.ntu.edu.sg/home/nprivault/papers/malliavin\\_markov.pdf](http://www.ntu.edu.sg/home/nprivault/papers/malliavin_markov.pdf)



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## BIOGRAPHY

Professor Ling San is Provost and Vice President (Academic) at NTU Singapore. A Professor of Mathematical Sciences, he joined NTU in April 2005 as the Founding Head of the Division of Mathematical Sciences in the School of Physical & Mathematical Sciences (SPMS). He was Chair of SPMS from April 2008 to December 2010, and Dean, College of Science, from August 2011 to December 2017, before assuming his current appointments on 1 January 2018. Before joining NTU, he spent 13 years at the National University of Singapore (NUS).

## RESEARCH INTEREST

Professor Ling's research interests are in applications of algebra and number theory to combinatorial designs, coding theory, cryptography and sequences. He has published more than 180 journal and conference papers and two textbooks, and edited several conference proceedings. His research has clinched more than S\$20 million in funding.

## RELEVANT PUBLICATIONS

San Ling, Khoa Nguyen, Adeline Roux-Langlois, Huaxiong Wang. (2018). A lattice-based group signature scheme with verifier-local revocation. Theoretical Computer Science, 730(2018), 1-20.

Zuling Chang, Martians Frederic Ezerman, San Ling, Huaxiong Wang. (2018). Construction of de Bruijn sequences from product of two irreducible polynomials. Cryptography and Communications, 10(2), 251-275.

San Ling, Khoa Nguyen, Huaxiong Wang, Yanhong Xu. (2017). Lattice-Based Group Signatures: Achieving Full Dynamicity with Ease. The 15th International Conference on Applied Cryptography and Network Security (ACNS 2017).

San Ling, Khoa Nguyen, Huaxiong Wang, Yanhong Xu. (2017). Lattice-Based Group Signatures: Achieving Full Dynamicity with Ease. The 15th International Conference on Applied Cryptography and Network Security (ACNS 2017).

Yeow Meng Chee, Han Mao Kiah, San Ling, and Hengjia Wei. (2017). Geometric Orthogonal Codes Better than Optical Orthogonal Codes. The IEEE International Symposium on Information Theory.



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## BIOGRAPHY

Dr. Qihua Xiong is currently Nanyang Assistant Professor at Nanyang Technological University. He holds a joint appointment between School of Physical and Mathematical Sciences and School of Electrical and Electronic Engineering. Prior to joining NTU, he worked as a postdoctoral research fellow in the laboratory of Professor Charles Lieber at Harvard University.

## RESEARCH INTEREST

Dr. Qihua Xiong's research is driven by the paradigm of bottom-up nanoscience and nanotechnology. His research covers rational synthesis of functional semiconductor nanomaterials, systematic investigations on their physical properties at quantum size regime and practical applications in nanoelectronics, nanophotonics and nanobiotechnology. His expertise includes Raman scattering spectroscopy, optical absorption spectroscopy, electron microscopy and spectroscopy, scanning probe microscopy, electrical transport, photoconductivity and nanopore biosensing. His group at NTU recently focuses on the following subjects:

- Develop novel approaches to synthesize and tune 1D nanomaterials and heterostructures
- Investigate their fundamental properties as an outcome of confined geometry and anisotropy
- Explore the applications of nanomaterials in nanoelectronics, nanophotonics, energy harvesting
- Build nanoelectronic-bio interfaces, e.g., nanopore field effect transistor for biosensing

## RELEVANT PUBLICATIONS

SungWoo Nam, Xiaocheng Jiang, Qihua Xiong, Donhee Ham and Charles M. Lieber. (2009). Vertically integrated, three-dimensional complementary metal-oxide-semiconductor circuits. Proceedings of the National Academy of Sciences of the United States of America (PNAS), 106(50), 21035-21038.



# Song Justin

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## KEY WORDS

mesoscopics, topological materials, plasmonics, out-of-equilibrium phenomena, quantum geometry, graphene, low-dimensional

## BIOGRAPHY

Justin's research interests cover a range in theoretical condensed matter physics: mesoscopics, plasmonics, non-equilibrium behavior, and geometrical phases. He received his BSc and ARCS in physics (Imperial College, 2007), AM (Harvard, 2011), PhD (Harvard, 2014). He is the recipient of a number of awards including the Young Scientist Award, National Research Foundation fellowship, a Caltech prize fellowship in physics, and a National Science Scholarship.

## RESEARCH INTEREST

Justin's research interests cover a range in theoretical condensed matter physics that include mesoscopics, plasmonics, non-equilibrium behavior, geometrical phases, topological materials, and two-dimensional heterostructures. group website: <https://sites.google.com/site/justincsong/home>

## RELEVANT PUBLICATIONS

1. Mark S. Rudner, Justin C. W. Song, Berryogenesis: self-induced Berry flux and spontaneous non-equilibrium magnetism Pre-print: arXiv: 1807.01708 (2018)
2. Li-kun Shi, Justin C. W. Song, Plasmon geometric phase and plasmon Hall shift, Physical Review X, 8, 021020 (2018)
3. Eddwi H. Hasdeo, Justin C. W. Song, Long-lived domain wall plasmons in gapped bilayer graphene, Nano Letters, 17, 7252 (2017)
4. Justin C. W. Song, Polnop Samutpraphoot, Leonid S. Levitov, Constructing Topological Bands in Generic Materials, PNAS 112, 10879 (2015).
5. Roman V. Gorbachev†, Justin C.W. Song†, Ge Liang Yu, A. V. Kretinin, F. Withers, Y. Cao, A. Mishchenko, K. S. Novoselov, K. Watanabe, T. Taniguchi, L. Levitov, A. K. Geim († equal contribution), Detecting Topological Currents in Graphene Superlattices, Science 346, 448 (2014).





# Tan Choon Hong

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choonhong@ntu.edu.sg

## KEY WORDS

Organic Chemistry, Catalysis, Asymmetric Synthesis

## BIOGRAPHY

Prof. Tan received his BSc (Hons) First Class from the National University of Singapore (NUS) in 1995 and completed his PhD from the University of Cambridge in 1999. Following that, he carried out two years postdoctoral training at the Department of Chemistry and Chemical Biology, Harvard University. Subsequently, he worked as a Research Associate at Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School for another year before joined the Department of Chemistry, National University of Singapore as Assistant Professor in 2003. He was promoted to Associate Professor in 2010. He joined Nanyang Technological University in 2012. He was promoted to Professor in 2016.

## RESEARCH INTEREST

Professor Tan's research interest is in the field of Synthetic Organic Chemistry and Catalysis, Radiochemistry.

Website: <http://www.ntu.edu.sg/home/choonhong/>

## RELEVANT PUBLICATIONS

C. Wang, L. Zong, C.-H. Tan, Enantioselective Oxidation of Alkenes with Potassium Permanganate Catalyzed by Chiral Dicationic Bisguanidinium, *Journal of the American Chemical Society*, 2015, 137, 10677 – 10682 (Highlighted by ACS Select Virtual Issue on Organocatalysis). X. Ye, A. M. P. Moeljadi, K. F. Chin, H. Hirao, L. Zong, C.-H. Tan, Bisguanidinium Diphosphatobisperoxotungstate Ion-pair Catalyzed Enantioselective Sulfoxidation, *Angewandte Chemie International Edition*, 2016, 55, 7101 – 7105. L. Zong, C. Wang, X. Ye, C.-H. Tan, Bisguanidinium Dinuclear Oxodiperoxomolybdatesulfate  $[(\mu_2\text{-SO}_4)\text{Mo}_2\text{O}_2(\mu_2\text{-O}_2)_2(\text{O}_2)_2]$  Ion-Pair: Characterization and Application in Asymmetric Sulfoxidation, *Nature Communications*, 2016, 7, 13455. L. Zong, C.-H. Tan, Phase transfer and ion pairing catalysis of pentanidiums and bisguanidiniums, *Accounts of Chemical Research*, 2017, 50, 842 – 856.



# Tay Dalton

## ASSISTANT PROFESSOR

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## BIOGRAPHY

Dr. Dalton Tay received his B. Eng (1st Class Honors) and Ph.D. from the School of Materials Science and Engineering, Nanyang Technological University (NTU) in 2007 and 2012 respectively. His Ph.D. research focused on the development of novel micropatterned bio-polymeric surfaces to direct lineage specification of adult stem cells for regenerative medicine. In 2012, he joined the National University of Singapore (NUS) as a Lee Kuan Yew (LKY) postdoctoral fellow with the Department of Chemical and Biomolecular Engineering. During his post-doctoral tenure, he majored in the etiology of inorganic nanomaterials triggered biological responses within the framework of biosafety and nanotherapeutics. In addition, he has also developed several bio-inspired nano-micro systems that could be applied for diagnostic and screening applications. He subsequently joined the School of Materials Science and Engineering (NTU) as an Assistant Professor in September 2015.

## RESEARCH INTEREST

The overarching focus of Dr Tay's research lies at the nexus between small scale (micro-nano) biomaterials and biology. His research group seeks to understand and develop novel biomaterials-centric strategies to control living systems for biomedicine and biotechnology.

Areas of current research include:

- (i) Micro-nano scale technologies for regenerative medicine and biosensing
- (ii) Mechano-chemical signal transduction in eukaryotes
- (iii) "Self-therapeutic" nanomaterials
- (iv) 3D printed bio-inspired micro-physiological systems for cancer and skin research

## RELEVANT PUBLICATIONS

- C. Y. Tay, Y-L. Wu., P. Cai, N. S. Tan, S.S Venkatraman, X. Chen, L. P Tan. (2015). Bio-inspired micropatterned hydrogel to direct and deconstruct hierarchical processing of geometry-force signals by human mesenchymal stem cells during smooth muscle cell differentiation. NPG Asia Materials, 7, e199.
- C. Y. Tay, L. Yuan, D. T Leong. (2015). Nature-Inspired DNA nanosensor for real-time in situ detection of mRNA in Living Cells. ACS Nano, 9(5), 5609-5617.
- M. I. Setyawati, C. Y. Tay, D. Docter, R. H. Stauber, D. T. Leong. (2015). Understanding and exploiting nanoparticles' intimacy with the blood vessel and blood. Chemical Society Reviews, , (in press).
- C.Y. Tay, M.I. Setyawati, J. Xie, W.J. Parak, D.T. Leong. (2014). Back to Basic: Exploiting the innate physico-chemical characteristics of nanomaterials for biomedical applications. Advanced Functional Materials, 24(38), 5936-5955.
- C.Y. Tay, P. Cai, M.I. Setyawati, W. Fang, L.P. Tan, C.H.L. Hong, X. Chen, D.T. Leong. (2014). Nanoparticles strengthen intracellular tension and retard cellular migration. Nano Letters, 14(1), 83-88.



# Venkatraman Subramanian

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## BIOGRAPHY

Dr. Subbu Venkatraman has a PhD in Polymer Chemistry from Carnegie-Mellon University. He has spent about 15 years in biomedical R&D in the USA, working with various applications of polymeric biomaterials. He held a senior position in R&D at Alza Corporation prior to joining NTU as Associate Professor in 2000. Since then he has published extensively in the field of biomaterials, with a total of 130 publications, and a citation count of 1300+ and a h-index of 23. He also holds 20 issued US patents in biomaterials/drug delivery, and 5 of these have been translated into products. He is concurrently the Director of the Ocular Therapeutic Engineering Centre, as well as Dy Director of the Nanyang Institute of Technology in Health & Medicine, and works closely with clinicians from Singapore and world-wide.

## RESEARCH INTEREST

Research is focussed on the applications of polymeric biomaterials in medicine. In particular, research areas include biodegradable stents, injectable drug delivery systems and gene delivery. Controlled release of drugs to the eye and the cardiovascular system are the primary end applications. Cancer therapy using "stealth" particles also forms a significant component of the research activities.

## RELEVANT PUBLICATIONS

U. Sarig, H. Sarig, A. Gora, G. C. T. Au-Yeung, E. de Berardinis, S. Y. Chaw, E. Zussman, S. Ramakrishna, F. Y. C. Boey, S. S. Venkatraman, M. Machluf. (2018). Biological and mechanical interplay at the Macro-and Microscales Modulates the Cell-Niche Fate. *Scientific Reports*, 8(1), 3937.

Tijore A, Behr JM, Irvine SA, Baisane V, Venkatraman S. (2018). Bioprinted gelatin hydrogel platform promotes smooth muscle cell contractile phenotype maintenance.. *Biomedical Microdevices*, 20(2), 32.

A. Tijore, S.A.Irvine, U. Sarig, P. Mhaisalkar, V. Baisane, S. Venkatraman. (2018). Contact guidance for cardiac tissue engineering using 3D bioprinted gelatin patterned hydrogel. *Biofabrication*, 10(2), 025003.

Liu YC, Ng AHC, Ng XW, Yan P, Venkatraman SS, Mehta JS, Wong TT. (2017). Evaluation of a Sustained-release Prednisolone Acetate Biodegradable Subconjunctival Implant in a Non-Human Primate Model. *Translational Vision Science & Technology*, 6(5), 9.

Luong T.H. Nguyen, Aristo Muktabar, Jinkai Tang, Vinayak P. Dravid, C. Shad Thaxton, Subbu Venkatraman, Kee Woei Ng. (2017). Engineered nanoparticles for the detection, treatment and prevention of atherosclerosis: how close are we?. *Drug Discovery Today*, 22(9), 1438-1446.



# Wilkowski David

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## BIOGRAPHY

BS (Physics), University of Lille 1; PhD (Physics),  
University of Lille 1

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## RESEARCH INTEREST

Ultracold Matter and Quantum Technologies, hybrid systems, quantum information, coherent multiple scattering of light, metamaterials

My major research interest is on ultracold atoms physics. The general goal of my research is to use those systems as Quantum simulators for problems related to other fields such as condensed matter or high energy physics.

With ultracold atoms, one has a very good control of the experimental environment (Temperature of the sample for example). On top of it, Key parameters, such as the interaction strength with external fields (E-M and Magnetic) or between atoms (scattering length), can be tune almost at will. Thus, this extremely versatile and clean tool has allowed researchers to explore for example phase transition driven by the quantum statistic (Bose-Einstein condensation), or driven by the interatomic interaction (superfluid to MOTT insulator transition) and many more interesting phenomena related to the very long coherence time of the Quantum gas.

## RELEVANT PUBLICATIONS

1. Chan, E. A.; Aljunid, S. A.; Adamo, G.; Laliotis, A.; Ducloy, M.; Wilkowski D. Tuning Casimir-Polder interactions in atommetamaterial hybrid devices, Accepted for publication in Science Advance (2017).
2. Aljunid, S. A.; Chan, E. A.; Adamo, G.; Ducloy, M.; Wilkowski, D.; Zheludev, N. I. Atomic Response in the Near-field of Nanostructured Plasmonic Metamaterial, NanoLetters 16, 3137 (2016).
3. Kwong, C. C.; Yang, T.; D. Delande, R. Pierrat and D. Wilkowski, Cooperative emission of a pulse train in an optically thick scattering medium, Phys. Rev. Lett. 115, 223601 (2015).
4. Kwong, C. C.; Yang, T.; Pramod, M.; Pandey, K.; Delande, D.; Pierrat, R.; Wilkowski, D. Cooperative emission of a coherent superflash of light, Phys. Rev. Lett. 113, 223601 (2014).



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## BIOGRAPHY

Dr. Chen Xiaodong is a Full Professor at the School of Materials Science and Engineering (MSE), Nanyang Technological University (NTU). He received his B.S. degree (Honours) in chemistry from Fuzhou University, China, in 1999, M.S. degree (Honours) in physical chemistry from the Chinese Academy of Sciences in 2002, and PhD degree (Summa Cum Laude) in biochemistry from the University of Münster, Germany, in 2006. After his postdoctoral fellow training at Northwestern University, USA, he joined NTU as a National Research Foundation (NRF) Fellow and Nanyang Assistant Professor (NAP) in 2009 in (MSE). He was promoted to Associate Professor with tenure in 2013, and Full Professor in 2016.

## RESEARCH INTEREST

Professor Chen's research focuses on developing soft materials for the applications in flexible devices, energy storage, and healthcare.

Currently, Prof. Chen's research focuses on two directions:

- (1) Integrated nano-bio interface: to develop programmable nanostructure-biomaterial hybrid systems for monitoring, manipulating, and mimicking biological processes.
- (2) Programmable materials for energy conversion: to explore programmable modules for electrochemical energy conversion and storage.

## RELEVANT PUBLICATIONS

Cai, P.; Hu, B.; Leow, W. R.; Wang, X.; Loh, X. J.; Wu, Y.-L.; Chen, X. (2018). Biomechano-Interactive Materials and Interfaces. *Advanced Materials*, 29, 1800572.

Yang, H.; Leow, W. R.; Chen, X. (2018). Thermal-responsive Polymers for Enhancing Safety of Electrochemical Storage Devices. *Advanced Materials*, 30(13), 1704347.

B.K.. Chandran, S.A. Veldhuis, X.Y. Chin, A. Bruno, N. Yantara, X. Chen, and S. Mhaisalkar. (2018). Precursor Non-stoichiometry to Enable Improved CH<sub>3</sub>NH<sub>3</sub>PbBr<sub>3</sub> Nanocrystal LED Performance. *Physical Chemistry Chemical Physics*, 20(8), 5918-5925.

Zhisheng Lv, Yifei Luo, Yuxin Tang, Jiaqi Wei, Zhiqiang Zhu, Xinran Zhou, Wenlong Li, Yi Zeng, Wei Zhang, Yanyan Zhang, Dianpeng Qi, Shaowu Pan, Xian Jun Loh, Xiaodong Chen. (2017). Editable Supercapacitors with Customizable Stretchability Based on Mechanically Strengthened Ultralong MnO<sub>2</sub> Nanowire Composite. *Advanced Materials*, 30(2), 1704531.

Yanyan Zhang, Oleksandr I. Malyi, Yuxin Tang, Jiaqi Wei, Zhiqiang Zhu, Huarong Xia, Wenlong Li, Jia Guo, Xinran Zhou, Zhong Chen, Clas Persson, Xiaodong Chen. (2017). Reducing Charge Carrier Transport Barrier in Functionally Layer-graded Electrode. *Angewandte Chemie International Edition*, 56(47), 14847-14852.





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## KEY WORDS

Electrocatalysis; thermal catalysis; chemical energy storage materials; green chemistry

## BIOGRAPHY

Zhichuan is an associate professor in School of Materials Science and Engineering, Nanyang Technological University. He is member of International Society of Electrochemistry and The Electrochemistry Society, and Fellow of Royal Society of Chemistry. He served as a guest editor for the special issue ICEI2016 of *Electrochimica Acta* and an associate editor for *Nano-Micro Letters*. He is also the development editor for *Current Opinion in Electrochemistry* and the vice president of ECS Singapore.

## RESEARCH INTEREST

Electrocatalysis; thermal catalysis; chemical energy storage materials; green chemistry

## RELEVANT PUBLICATIONS

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## KEY WORDS

soft and biological  
interfaces, bioinspired  
materials, biomimetics,  
polymers, self-assembly of  
supramolecular structures,  
non-equilibrium  
interactions, X-ray and  
neutron scattering  
techniques

## BIOGRAPHY

Dr. Yu Jing is an assistant professor in MSE at NTU in Singapore since Aug 2017. He obtained his Ph.D. in Chemical Engineering from the University of California, Santa Barbara in 2012. His Ph.D. research under the supervision of Prof. Jacob Israelachvili focused on the nanomechanics of biomaterials and biomimetics. In 2014, he expanded his research interests towards polyelectrolytes brushes during his postdoc with Prof. Matthew Tirrell at the University of Chicago.

## RESEARCH INTEREST

The overall goal of Dr. Yu Jing's research is to characterize the dynamic properties of interfaces with hierarchical structures, and to gain molecular-level control of soft interfaces to enable the design of integrated, multifunctional interfaces. He is interested in non-equilibrium interactions and properties of soft interfaces, bioinspired materials, and biomimetics, polymers, self-assembly of supramolecular structures, as well as X-ray and neutron scattering techniques.

## RELEVANT PUBLICATIONS

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<https://www.nature.com/articles/nchembio.630>



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## KEY WORDS

organic synthesis, polycyclic aromatic hydrocarbons, conjugated polymers, crystalline inorganic materials, FET, Memory, Batteries, solar cells, photoelectrochemical cells, MFCs

## BIOGRAPHY

He obtained his B.S. at Nanjing University (China); M.S. in Institute of Chemistry, Chinese Academy of Sciences; and his Ph.D. at University of California Riverside. He did his postdoctor at Northwestern University. In 2009, he joined MSE, NTU as an assistant professor. In 2014, he was promoted to associate professor with tenure. Currently, he is an associate editor of J. Solid State Chem and a fellow of the Royal Society of Chemistry. He has published > 287 papers and 4 patents (H-index: 62).

## RESEARCH INTEREST

Dr. Qichun Zhang's research focuses on the exotic materials and their applications: (1) Novel organic conjugated small molecules and polymers for batteries, memory, FET, OLEDs, Solar Cell, MFCs and Ferroelectrics (2) Inorganic-organic hybrid materials for sensing, memory, and energy conversion (3) Inorganic semiconductors for nonlinear optical application, water-splitting and magnetic application.

## RELEVANT PUBLICATIONS

(1) Q. Zhang\*, Angew. Chem. Int. Ed. 2018, DOI: 10.1002/anie.201803432. (2) W. Chen, Y. Song, L. Zhang, M. Liu,\* X. Hu,\* Q. Zhang\*, Angew. Chem. Int. Ed. 2018, 57(21), 6289-6293. (3) H. Ye, G. Liu, S. Liu, D. Casanova,\* X. Ye, X. Tao, Q. Zhang,\* Q. Xiong\*, Angew. Chem. Int. Ed. 2018, 57(7), 1928-1932. (4) J. Xie, Z. Wang, Z. J. Xu, Q. Zhang\*, Adv. Energy Mater. 2018, 8, 1703509. (5) G. Liu, J. Liu, X. Ye, L. Nie, P. Gu, X. Tao\*, Q. Zhang\*, Angew. Chem. Int. Ed. 2017, 56, 198-202. (6) R.-B. Song, Y. Wu, Z.-Q. Lin, J. Xie, C. H. Tan, J. S. C. Loo,\* B. Cao,\* J.-R. Zhang,\* J.-J. Zhu\*, Q. Zhang\*, Angew. Chem. Int. Ed. 2017, 56, 10516-10520. (7) N. Wang, K. Zhao, T. Ding, W. Liu, A. Ali Said, Z. Wang, M. Tian, X. W. Sun,\* Q. Zhang\*, Adv. Energy Mater. 2017, 7, 1700522. (8) C. Wang, J. Zhang, G. Long, N. Aratani, H. Yamada, Y. Zhao, Q. Zhang\*, Angew. Chem. Int. Ed. 2015, 54(21), 6292-6296. (9) J. Wu, X. Rui, G. Long, W. Chen, Q. Yan\*, Q. Zhang\*, Angew. Chem. Int. Ed., 2015, 54, 7354-7358 (10) W.-W. Xiong, Q. Zhang\* Angew. Chem. Int. Ed. 2015, 54(40), 11616-11623



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## KEY WORDS

functional materials, gas storage and conversion, heterogeneous catalysis, metal-organic frameworks, porous materials

## BIOGRAPHY

Dr. Yanli Zhao is currently an Associate Professor in Nanyang Technological University. He conducted his postdoctoral research with Professor Sir Fraser Stoddart. He has received several awards, including the National Research Foundation (NRF) Investigatorship, ACS Applied Materials & Interfaces Young Investigator Award, Asian and Oceanian Photochemistry Association Prize for Young Scientists, TR35@Singapore Award, and NRF Fellowship. He is an Associate Editor of ACS Applied Nano Materials.

## RESEARCH INTEREST

Dr. Yanli Zhao's research focuses on the development of integrated systems for diagnostics and therapeutics, as well as porous materials for energy storage and catalysis. His group utilizes interdisciplinary approaches to investigate the emerging problems at the forefront of chemistry and materials, aiming to address some of the scientific and technological needs, such as responsive nanomaterials, controlled drug delivery and medical diagnostics, and heterogeneous catalysis. Group website: [www.ntu.edu.sg/home/zhaoyanli/](http://www.ntu.edu.sg/home/zhaoyanli/).

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