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Appointment Status

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Research Interests

- Nanobiophotonics & Nanomedicine
- Biomaterials
- Biomedical Microdevices

Teaching Interests

- BN4404 BioMEMS
- BN3303 Introduction to Biomaterials
- BN1901 Principles of Bioengineering
- GEK2505 Introductory Biomedical Engineering

Editorial Board Memberships

- Recent Patents on Nanotechnology
- Recent Patents on Biomedical Engineering
- Recent Patents on Engineering
- Recent Patents on Material Science
- The Open Drug Delivery Journal
- The Open Nanoscience Journal
- The Open Chemical Engineering Journal
- The Open Biomedical Engineering Journal
- The Open Nanomedicine Journal
- The Open Colloid Science Journal
- International Journal of Biomedical Engineering and Consumer Health Informatics
- Central European Journal of Engineering
- World Journal of Clinical Oncology
- Journal of Nanoscience Letters (Associate Editor)
- ISRN Nanotechnology
- Nanomed
- Journal of Biochips & Tissue Chips
- Current Science Perspectives

Selected Publications

- Kwek K Ranjan S, Zhang Y. Rotational separation of non-spherical bioparticles using I-shaped pillar arrays in a microfluidic device. Nature Communications 4, 1625 (2013).
- Idris NM, Jayakumar MKG, Zhang J, Ho PC, Mahendran R, Zhang Y. In vivo photodynamic therapy using upconversion nanoparticles as remote-controlled nanotransducers. Nature Medicine 18, 1580-1585 (2012).
- Jayakumar MKG, Idris NM & Zhang Y. Remote activation of biomolecules in deep tissues using near-infrared-to-UV upconversion nanotransducers. Proceedings of the National Academy of Sciences of the United States of America (PNAS) 109, 8483-8488 (2012).
- Priyam A, Idris NM & Zhang Y. Gold nanoshell coated NaYF4 nanoparticles for simultaneously enhanced upconversion fluorescence and darkfield imaging. Journal of Materials Chemistry 22, 960-965 (2012).
- Lim ME, Lee YL, Zhang Y & Chu JJH. Photodynamic inactivation of viruses using upconversion nanoparticles. Biomaterials 33, 1912-1920 (2012).

- Paik P & Zhang Y. Synthesis of hollow and mesoporous polycaprolactone nanocapsules. Nanoscale 3, 2215-2219 (2011).
- Guo HC, Idris NM & Zhang Y. LRET-Based Biodetection of DNA Release in Live Cells Using Surface-Modified Upconverting Fluorescent Nanoparticles. Langmuir 27, 2854-2860 (2011).
- Dou QQ, & Zhang Y. Tuning of the Structure and Emission Spectra of Upconversion Nanocrystals by Alkali Ion Doping. Langmuir 27, 13236-13241 (2011).
- Ang LY, Lim ME, Ong LC & Zhang Y. Applications of upconversion nanoparticles in imaging, detection and therapy. Nanomedicine 6, 1273-1288 (2011).
- Ong LC, Gnanasammandhan MK, Nagarajan S & Zhang Y. Upconversion: road to El Dorado of the fluorescence world. Luminescence 25, 290-293 (2010).
- Li ZQ & Zhang Y. Facile synthesis of lanthanide nanoparticles with paramagnetic, down- and up-conversion properties. Nanoscale 2, 1240-1243 (2010).
- Jiang S & Zhang Y. Upconversion Nanoparticle-Based FRET System for Study of siRNA in Live Cells. Langmuir 26, 6689-6694 (2010).
- Jiang S, Gnanasammandhan MK & Zhang Y. Optical imaging-guided cancer therapy with fluorescent nanoparticles. Journal of the Royal Society Interface 7, 3-18 (2010).
- Guo HC, Qian HS, Idris NM & Zhang Y. Singlet oxygen-induced apoptosis of cancer cells using upconversion fluorescent nanoparticles as a carrier of photosensitizer. Nanomedicine-Nanotechnology Biology and Medicine 6, 486-495 (2010).
- Chatterjee DK, Gnanasammandhan MK & Zhang Y. Small Upconverting Fluorescent Nanoparticles for Biomedical Applications. Small 6, 2781-2795 (2010).
- Qian HS, Guo HC, Ho PCL, Mahendran R & Zhang Y. Mesoporous-Silica-Coated Up-Conversion Fluorescent Nanoparticles for Photodynamic Therapy. Small 5, 2285-2290 (2009).
- Li ZQ, Zhang Y, Shuter B. & Idris NM. Hybrid Lanthanide Nanoparticles with Paramagnetic Shell Coated on Upconversion Fluorescent Nanocrystals. Langmuir 25, 12015-12018 (2009).
- Idris NM et al. Tracking transplanted cells in live animal using upconversion fluorescent nanoparticles. Biomaterials 30, 5104-5113 (2009).
- Cheng JT, Zhang Y, Gopalakrishnakone P & Chen NG. Use of the Upside-Down Method to Prepare Porous Polymer Films with Tunable Surface Pore Sizes. Langmuir 25, 51-54 (2009).
- Qian HS & Zhang Y. Synthesis of Hexagonal-Phase Core-Shell NaYF4 Nanocrystals with Tunable Upconversion Fluorescence. Langmuir 24, 12123-12125 (2008).
- Li ZQ, Zhang Y & Jiang S. Multicolor Core/Shell-Structured Upconversion Fluorescent Nanoparticles. Advanced Materials 20, 4765-+ (2008).
- Jalil RA & Zhang Y. Biocompatibility of silica coated NaYF4 upconversion fluorescent nanocrystals. Biomaterials 29, 4122-4128 (2008).
- Chatterjee DK & Zhang Y. Upconverting nanoparticles as nanotransducers for photodynamic therapy in cancer cells. Nanomedicine 3, 73-82 (2008).
- Chatterjee DK, Fong LS & Zhang Y. Nanoparticles in photodynamic therapy: An emerging paradigm. Advanced Drug Delivery Reviews 60, 1627-1637 (2008).
- Chatteriee DK, Rufalhah AJ & Zhang Y. Upconversion fluorescence imaging of cells and small animals using lanthanide doped nanocrystals. Biomaterials 29, 937-943 (2008).
- Zhang Y & Wang C. Micropatterning of proteins on 3D porous polymer films fabricated by using the breath-figure method. Advanced Materials 19, 913-+ (2007).

- Yap FL & Zhang Y. Protein and cell micropatterning and its integration with micro/nanoparticles assembly. Biosensors & Bioelectronics 22, 775-788 (2007).
- Yap FL & Zhang Y. Assembly of polystyrene microspheres and its application in cell micropatterning. Biomaterials 28, 2328-2338 (2007).
- Tan WB, Jiang S & Zhang Y. Quantum-dot based nanoparticles for targeted silencing of HER2/neu gene via RNA interference. Biomaterials 28, 1565-1571 (2007).
- Lim CT & Zhang Y. Bead-based microfluidic immunoassays: The next generation. Biosensors & Bioelectronics 22, 1197-1204 (2007).
- Lim CT & Zhang Y. Novel dome-shaped structures for high-efficiency patterning of individual microbeads in a microfluidic device. Small 3, 573-579 (2007).
- Li J & Zhang Y. Porous polymer films with size-tunable surface pores. Chemistry of Materials 19, 2581-2584 (2007).
- Wang F, Zhang Y, Fan XP & Wang MQ. Facile synthesis of water-soluble LaF3 : Ln(3+) nanocrystals. Journal of Materials Chemistry 16, 1031-1034 (2006).
- Wang C, Zhang Y, Seng HS & Ngo LL. Nanoparticle-assisted micropatterning of active proteins on solid substrate. Biosensors & Bioelectronics 21, 1638-1643 (2006).
- Nie QL, Zhang Y, Zhang J & Zhang MQ. Immobilization of polydiacetylene onto silica microbeads for colorimetric detection. Journal of Materials Chemistry 16, 546-549 (2006).
- Lu MH & Zhang Y. Microbead patterning on porous films with ordered arrays of pores. Advanced Materials 18, 3094-+ (2006).
- Li ZQ & Zhang Y. Monodisperse silica-coated polyvinylpyrrolidone/NaYF4 nanocrystals with multicolor upconversion fluorescence emission. Angewandte Chemie-International Edition 45, 7732-7735 (2006).
- Hoa MLK, Lu MH & Zhang Y. Preparation of porous materials with ordered hole structure. Advances in Colloid and Interface Science 121, 9-23 (2006).
- Yap FL & Zhang Y. Protein micropatterning using surfaces modified by self-assembled polystyrene microspheres. Langmuir 21, 5233-5236 (2005).
- Wang C & Zhang Y. Protein micropatterning via self-assembly of nanoparticles. Advanced Materials 17, 150-+ (2005).
- Tan WB & Zhang Y. Multifunctional quantum-dot-based magnetic chitosan nanobeads. Advanced Materials 17, 2375-+ (2005).
- Yang XT & Zhang Y. Encapsulation of quantum nanodots in polystyrene and silica micro-/nanoparticles. Langmuir 20, 6071-6073 (2004).

Book Chapters

- Jayakumar MK and Zhang Y, Rare Earth Nanomaterials in Fluorescence Microscopy. In Rare Earth Materials in Nanotechnology. ed. Timothy Tan Thatt Yany, 55-78. Singapore: Pan Stanford Publishing Pte. Ltd, 2012.
- Tan TTY, Liu S, Zhang Y, Han MY and Selvan ST, Microemulsion Preparative Methods (Overview). In Comprehensive Nanoscience and Technology, 399-441. Maryland Heights: Elsevier B.V., 2010. 43 pp.
- Amalraj AI and Zhang Y, Upconverting Fluorescent Nanoparticles for Biological Applications. In Emerging Nanotechnologies for manufacturing, ed. Waqar Ahmed and M.J. Jackson. Micro and Nano Technologies, vol. 978-0-08-094763-1. New York: Elsevier Science, 2009. 20 pp.
- Chatterjee DK and Zhang Y, Lanthanide Doped Upconverting Nanoparticles for Biomedical Applications. In Doped Nanomaterials and Nanodevices, ed. Wei Chen. California: American Scientific Publishers, 2008. 20 pp.
- Zhang Y and Wang F, Use of nanoparticles as building blocks for

bioapplications. In Molecular Building Blocks for Nanotechnology: From Diamondoids to Nanoscale Materials and Applications, ed. G. A. Mansoori, T. F. George, L. Assoufid and G. P. Zhang, 353-376. Topics in Applied Physics, vol. 109. BERLIN: SPRINGER-VERLAG BERLIN, 2007. 24 pp.

- Chatterjee, DK and Zhang Y, Nanoparticles in immunotherapy against cancer. In Cancer Nanotechnology, ed. H. S. Nalwa and T. J. Webster, 317-332. Stevenson Ranch: American Scientific Publishers, 2006. 16 pp.
- Zhang Y and Chatterjee DK, Lyposomes, dendrimers and other polymeric nanoparticles for targeted delivery of anticancer agents - A comparative study. In Nanomaterials for Cancer Therapy, ed. Challa Kumar, 338-370. Nanotechnologies for the Life Sciences, vol. 6, ed. Challa Kumar. Weinheim: Wiley-VCH Verlag GmbH & Co. KGaA, 2006. 33 pp.
- Zhang Y and Zhang MQ, High-efficiency intracellular uptake of superparamagnetic magnetite nanoparticles for biomedical applications. In Nanoscience and Nanotechnology in Perspective, ed. Liu Guokui, Wang Zhonglin, 282-291. Beijing: Tshinghua University Press, 2002.

Patents

- Upconversion Fluorescent Nano-Structure Material and Uses Thereof, US Patent Application No.: 12/445,904, filed on 17/10/2007, US Grant No.: 8,093,566, issued on 10/01/2012.
- Method of Patterning and Product(s) Obtained Therefrom, PCT/SG2007 /000116, filed on 24/04/2007
- Novel Method for Microbead Patterning and Application Thereof, US provisional patent, 60/795,811, filed on 25/04/2006
- A New Microfluidic Device for Multiplexed Bead Based Detection, US provisional patent, 60/800,860, filed on 17/05/2006
- Monodisperse Infrared-to-Visible Upconversion Nanoparticle Phoshors, US provisional patent, 60/829,768, filed on 17/10/2006
- Novel 3-D Pyramidal Porous-Membrane and its Applications Thereof, US provisional patent (PCT application is being filed), 61/491,395, filed on 31/05/2011