Curriculum vitae

Syamantak Khan, PhD

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I. Education

08/2014-01/2018	Ph.D., Chemistry	Indian Institute of Technology, Mandi, India
05/2012-06/2017	M.Tech., Biotechnology	Indian Institute of Technology, Kharagpur, India
05/2012-6/2017	B.Tech., Biotechnology	Indian Institute of Technology, Kharagpur, India

II. Positions & Academic Appointments

2018-Present	Postdoctoral Researcher at Radiation Oncology, Stanford University
2018 (Mar-May)	Postdoctoral Fellow at Third Institute of Physics, Georg-August-University, Germany
2016 (summer)	Guest Scientist at Third Institute of Physics, Georg-August-University, Germany
2014-2018	Research Fellow, Indian Institute of Technology, Mandi. India
2012-2014	Research Associate, Indian Institute of Technology, Mandi. India

III. Honors & Awards

2020	Young Investigator Award (First Place), AAPM, Northern California Chapter
2020	Third place in SLAM talk competition, AAPM, Northern California Chapter
2019	Finalist, Dean's Fellowship at Stanford Medical School
2016	Best poster award, Int. Conference on ‘Recent Advances in Molecular Spectroscopy’, Hyderabad

IV. Professional Memberships

2019 – Present	Associate Member, American Association for Cancer Research (AACR)
2019 – Present	Student Member, World Molecular Imaging Society (WMIS)

V. Original Peer-Reviewed Research Articles

Under Review

S Khan, J H Shin, N Cheng, C Kuo, J Sunwoo, G Pratx. High-resolution positron emission microscopy of patient-derived tumor organoids (Preprint DOI: https://doi.org/10.1101/2020.07.28.220343)

S Khan, M Bassenne, J Wang, R Manjappa, D Y. Breitkreutz, P G. Maxim, L Xing, B W. Loo Jr, G Pratx. Multicellular spheroids as in vitro models of oxygen depletion during FLASH irradiation

S Khan, S Kim, Y P Yang and G Pratx. High resolution imaging of FDG uptake by tumor and associated stroma using multimodal radioluminescence microscopy

2020 M J Neufeld, H Winter, M R. Landry, A M Goforth, **S Khan**, G Pratx, and C Sun Lanthanide Metal–Organic Frameworks for Multispectral Radioluminescent Imaging. ACS Applied Materials & Interfaces, 2020 DOI: 10.1021/acsami.0c06010

Y Ren, J G. Rosch, M R. Landry, H Winter, **S Khan**, G Pratx and C Sun Design and synthesis of Tb doped Core-shell-shell nanophosphor for improved X-ray luminescence efficiency and X-ray induced photodynamic therapy

2018 **S. Khan**, A. Sharma, S. Ghoshal, S. Jain, M. Hazra, C. K. Nandi, Small Molecular Organic Nanocrystals Resemble the Properties of Carbon Nanodots, Chem. Sci., 2018,9, 175-180. (Royal Society of Chemistry, Impact Factor 8.7)

S Khan,* N C Verma, C Rao, C K Nandi, Carbon Dots for Single-Molecule Imaging of the Nucleolus ACS Appl. Nano Mater., 2018, 1, 483–487(*as a co-corresponding author)

S. Khan, S Jain, CK Nandi. Towards Understanding Citric Acid Derived High Quantum Yield Molecular Fluorophores: From Carbon Dots to Spherical Organic Nanocrystals. J Material Sci Eng. 2018, 7, 2169-0022.

S Khan, N C Verma, P Gupta, S Jain, S Ghosh, CK Nandi. Mechanistic Insight into the Carbon Dots: Protonation induced Photoluminescence. J Material Sci Eng. 2018. 7, 2169-0022.

2017 **S. Khan**, W. Li, N. Karedla, J. Thiart, I. Gregor, A. M. Chizhik, J. Enderlein, C. K. Nandi, A. I. Chizhik, Charge-Driven Fluorescence Blinking in Carbon Nanodots. J. Phys. Chem. Lett.,2017, 8, 5791-5757 (American Chemical Society, Impact Factor: 9.4)

C Rao, **S Khan,*** N C Verma, C K Nandi, Labelling of Proteins with Carbon Nanodots. Chem. Bio. Chem. 2017, 18, 2385-89. (*as a co-corresponding author)

2016 A Gupta, N C Verma, **S Khan**, S Tiwari, A Chaudhary, C K Nandi, Paper strip based and live cell ultrasensitive lead sensor using carbon nanodots synthesized from biological media, Sensors and Actuators- B, 2016, 232, 107-114.

A Gupta, N C Verma, **S Khan**, C K Nandi, Carbon nanodots for Naked Eye Colorimetric Ultrasensitive Arsenic and Glutathione Detection, Biosensors and Bioelectronics, 2016, 81, 465-472.

A Chaudhary, **S Khan**, A Gupta, C K Nandi, Effect of surface chemistry and morphology of gold nanoparticle on the structure and activity of common blood proteins. New J. Chem, 2016, 40, 4879-4883.

NC Verma, **S Khan**, CK Nandi, Single-molecule analysis of fluorescent carbon dots towards localization-based super-resolution microscopy, Methods and Applications in Fluorescence, 2016, 4, 044006.

2015 **S. Khan**, A Gupta, N C Verma, C K Nandi, Time-Resolved Emission Reveals Ensemble of Emissive States as the Origin of Multicolor Fluorescence in Carbon nanodots. Nano Lett.,2015, 15, 8300–8305 (American Chemical Society, Impact Factor:12.7)

S. Khan, N C Verma, C K Nandi, Reversible Photoswitching of Carbon nanodots Sci Rep, 2015, 5, 11423. (Nature Publishing Group, Impact Factor:4.3)

S Khan, A Gupta, N C Verma, C K Nandi, Kinetics of Protein Adsorption on Gold Nanoparticle with Variable Protein Structure and Nanoparticle Size, J. Chem. Phys.2015, 143, 164709.

A Gupta, A Chaudhary, P Mehta, C Dwivedi, **S Khan**, N C Verma, C K Nandi , Nitrogen Doped Thiol Functionalized Carbon nanodots for Ultrasensitive Hg (II) Detection, Chem. Commun., 2015, 51, 10750-10753.

S Khan, A Gupta, A Chaudhary, C K Nandi, Orientational switching of protein conformation as a function of nanoparticle curvature and their geometrical fitting, J. Chem. Phys., 2014, 141, 084707.

S. Khan, C. K. Nandi, Optimizing the underlying parameters for protein-nanoparticle interaction: advancement in theoretical simulation, Nanotechnol. Reviews, 2014, 3, 347-359

A Chaudhary, A Gupta, **S Khan**, C K Nandi, Morphological effect of gold nanoparticles on the adsorption of bovine serum albumin, Phys. Chem. Chem. Phys., 2014, 16, 20471-20482

2013 **S. Khan**, A Gupta, C K Nandi, Controlling the fate of protein corona by tuning surface properties of nanoparticles, J. Phys. Chem. Lett., 2013, 4, 3747-3752. (American Chemical Society, Impact Factor:9.4)

VI. Published Abstract in Peer-Reviewed Journal

2020 **S Khan**, J H Shin, N Cheng, C Kuo, J Sunwoo, G Pratx. High-resolution positron emission microscopy of patient-derived tumor organoids. Cancer Res 2020, 80, B08. *(DOI: 10.1158/1538-7445.CAMODELS2020-B08)*

S. Khan, M. Bassenne, J. Wang, R. Manjappa, B.W. Loo Jr., G. Pratx FLASH Irradiation of Avascular Tumor Spheroids. International Journal of Radiation Oncology Biology Physics, 108, E558, *(DOI: https://doi.org/10.1016/j.ijrobp.2020.07.1728)*

VII. Invited Talks

2020 High-Resolution Positron Emission Microscopy of Patient-Derived Tumor Organoids. *WIMC Virtual, Bridging Biology and Medicine with Molecular Imaging, October 7-9*

FLASH irradiation of multicellular spheroids. *Stanford Medical Physics Retreat 2020*

FLASH irradiation can spare in vitro multicellular spheroids by rapid radiolytic depletion of oxygen. *Northern California Chapter of the American Association of Physicists in Medicine. The Young Investigator's Symposium, May 1*

2017 Structure and properties of fluorescent carbon nanodots. *Advanced Functional Material Conference, University of California, Los Angeles, 17 August*

2016 A whirlwind trip to IIT Mandi. *Third Institute of Physics, University of Gottingen, 31 May*

Fluorescent Carbon Nanodots – The mysterious Nano lights. *Research Fair, IIT Mandi, 27 Feb.*

2015 Science beyond size limit-from Nanoparticle to Nanoscopy. *AMRC Symposium, IIT Mandi 30 May*

VIII. Peer-Review in Scientific Journal

- PLOS One (Public Library of Sciences)
- Scientific Report (Nature Publishing Group)

IX. Key Research Projects:

Bachelor's Thesis	Synthesis of folate-decorated chitosan nanoparticles for efficient drug delivery in amoeba. Department of Biotechnology, IIT Kharagpur, 2010-11.
Master's Thesis	Chitosan nanoparticle-mediated dsRNA delivery for gene silencing in Entamoeba histolytica. Department of Biotechnology, IIT Kharagpur, 2011-12
Doctoral Thesis	New Insights into Carbon Nanodots: Analysis of Ensemble and Single-Molecule Fluorescence. IIT Mandi, 2014-2017
Research Associate	Understanding the molecular interactions of human proteins and gold nanoparticle. IIT Mandi, 2012-2014
Visiting Scientist	Investigation of the origin of fluorescence blinking of single carbon nanodots. University of Goettingen, 2016 Summer.
Postdoc (Gottingen)	Quantum Yield measurement of semiconductor quantum dots (QDs) in an optical nanocavity. University of Goettingen 2018.
Postdoc (Stanford)	In-vitro bio-mimetic models of tumor for screening cancer therapy. Stanford University (2018-Present)

X. Teaching Experience

2020	Stanford	Guest lecture: Radiobiology and Radionuclide therapy *(BIOE 221 / RAD 221)*
2018	IIT Mandi	Teaching assistance for *Physical Chemistry Lab.*
2015	IIT Mandi	Teaching assistance for *Computation for Engineers*
2014	IIT Mandi	Teaching assistance for *Physical Chemistry Lab.*

XI. Mentorship, Advising and Outreach

2020	Stanford	Abtin Ghelmansarai, Summer Intern
2019	Stanford	Andrew Coli, Summer Intern
2018	IIT Mandi	Gayatri Batra, MSc Student
2017	IIT Mandi	Sanjhal Jain, MSc Student
2016	IIT Mandi	Souvik Ghosh, Summer Intern
2015-2018	IIT Mandi	Coordinator, *Preparing Rural Area Youth to Advance in Studies* - A volunteer-run tutoring and mentoring program for underprivileged school students