

Sachin Shet

Research Scientist & Radiological Safety Officer

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Professional Summary: Research Scientist with hands-on expertise in nuclear physics, radiation science, computational modeling, instrumentation, and Monte Carlo simulations. Experienced in developing custom scientific computing tools using Fortran and Python for research and data analysis. Skilled in the operation and management of advanced research equipment, including a tabletop proton accelerator and various radiation detectors. Conducted multiple radioisotope and radiation measurement experiments, integrating detector calibration, shielding design, and dosimetry. Certified Radiation Safety Officer (AERB, DAE) with proven experience in implementing radiation protection protocols and laboratory compliance. Strong background in interdisciplinary research, teaching, and mentoring in physics and computational methods.

Education

PhD in Physical Sciences (Pursuing as Part-Time) (Radiation Instrumentation, Neutron science, and Computational Modeling) Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal	2024
Master of Science in Physics. CGPA: 7.0. Department of Physics. Karnatak University Dharwad, Karnataka, India.	2013 – 2015
Bachelor of Science in Physical Sciences. Scored: 81.58 %. MGC & GHD college, Siddapur, Karnataka, India.	2010 – 2013

Professional Experience

Research Scientist & Radiological Safety Officer Manipal Institute of Technology, Manipal, Karnataka, India. (Academics, Research, Instrumentation and Radiation Safety)	Jul 2021 – Present
AI model trainer , www.outlier.ai (Freelancing work)	Oct 2024 – Jun 2025
Physics Expert , www.chegg.com (Freelancing work)	Jan 2019 – Oct 2023
Research Fellow Manipal Centre for Natural Sciences, Manipal, Karnataka, India.	Dec 2016 – Nov 2019
Process Associate Refinery section, Cargill India Pvt Ltd, Harihar, Karnataka, India.	Jul 2015 – Nov 2016

Certification

Certified Radiological Safety Officer (Research Application) – Issued by the Atomic Energy Regulatory Board (AERB), Department of Atomic Energy – 22nd March 2022

Research Domain

Nuclear Physics | Radiation Physics | Neutron Science | Neutron Activation Analysis | Radiation Shielding | Dosimetry | Monte Carlo Simulation | Computational Modelling | Radiation Measurement | Nuclear Instrumentation | Simulations | Scientific computing | Experimental Physics | Materials Under Neutron Irradiation | Radiation transport modelling

Skills and Expertise

Programming:	Fortran and Python (Advanced - Building scientific computing tools) C++, Django, Git, Web Development (beginner)
Systems / Tools:	MCNP, Geant4, OpenMC, FLUKA and Phy-X (Radiation transport modelling tools) Linux OS, Networking basics. scientific software deployment.
Instrumentations:	Handling Radioactive sources, HPGe and NaI(Tl) detector (Gamma spectroscopy), GM Counter, FTIR, X-Ray Diffractometer, Neutron and Gamma monitoring devices Table-top 50 keV proton Accelerator, laboratory setup and management.
Radiation Safety:	Radiation survey, Handling personnel monitoring devices (TLD and FNM). safety awareness, Shielding verifications, Dosimetry, eLORA updating, Maintaining regulations as required by the AERB (Atomic Energy Regulatory Board).
Academics:	Teaching Physics, Python Programming, Computation and Nuclear Lab sessions, Supervise students and research staff in radiation physics, neutron irradiation and computational modeling experiments.

Scientific Contributions & Innovations

Patents:	Granted on 30/04/2025 - Application Number - 202241073484 - IPR-India Title: A composite material for radiation shielding and a method for preparing the composite material.
Tools built:	MCkeff - Development of Indigenous Monte-Carlo code for the estimation of Criticality of Nuclear Fuel Cycle facilities. (December 2016 to November 2019 as research fellow) PI: Dr K. V. Subbaiah (Former BARC & SRI, IGCAR, Kalpakkam, India) Sponsored by: Board of Research in Nuclear Science, Department of Atomic Energy. MASKS - Manipal Application for SDG Keyword Solution. (WebApp) Designed and implemented a web-based keyword-analysis tool for academic and research documentation under SDG alignment.
Talks:	Neutron source and Research Applications, (Workshop on Science with Radiation -2025) Handson session - Radiation Detection - WSWR-2025
Events:	Treasurer - WSWR-2025 Local Organising Committee, (International Symposium on Nuclear Astrophysics - 2021)
Articles:	Journal Articles - 8 Conference proceedings - 12 Link to Articles List - Google Scholar



Journal Articles (Research Outputs)

2025

Sachin Shet, Ashwitha Nancy Dsouza, M.I. Sayyed, Aljawhara H. Almuqrin, Nagaraj Kamath, Srinivas Shenoy Heckadka, Sudha Kamath, Neutron shielding and activation estimation of Bismuth doped glasses $(60-x) \text{B}_2\text{O}_3-20\text{SiO}_2-x \text{Bi}_2\text{O}_3-12\text{ZnO}-8\text{BaO}$, Nuclear Materials and Energy, Volume 44, 2025, 101971, ISSN 2352 1791, <https://doi.org/10.1016/j.nme.2025.101971>.

Kanjarpane, S.R., Prajapati, P.M., Shet, S. et al. Determination of thermal neutron capture cross-section of cerium isotopes. Eur. Phys. J. A 61, 149 (2025). <https://doi.org/10.1140/epja/s10050-025-01621-6>

Saideep Shirish Bhat, Shivakumar Jagadish Shetty, M.P. Shilpa, Sachin Shet, K.M. Eshwarappa, S.C. Gurumurthy, Neutron irradiation induced transmuted Ga-doping of ZnO thin films: Structural and opto electronic investigations, Ceramics International, Volume 51, Issue 2, 2025, Pages 2695-2700, ISSN 0272-8842, <https://doi.org/10.1016/j.ceramint.2024.11.252>.

Shubham Ghag, Shivanand Bhushan, Sibi Oommen, Suhas Yeshwant Nayak, J.P. Jaideep, S.V. Suryanarayana, P.M. Prajapati, Sachin Shet, Subbaiah Kv, Paresh Prajapati, Fabrication of Kevlar based shielding material for attenuation of ionizing radiations, Radiation Physics and Chemistry, Volume 229, 2025, 112540, ISSN 0969 806X, <https://doi.org/10.1016/j.radphyschem.2025.112540>.

2024

M.P. Shilpa, Vipin Cyriac, S.C. Gurumurthy, Ismayil, Sachin Shet, K.V. Subbaiah, M.S. Murari, "A novel approach to enhance the ionic conductivity of silver nanoparticles incorporated PVA: NaBr polymer electrolyte films via fast neutron irradiation," Radiation Physics and Chemistry, Volume 218, 2024, ISSN 0969-806X, <https://doi.org/10.1016/j.radphyschem.2024.111590>

C. M. Kavitha, K. M. Eshwarappa, M. P. Shilpa, Shivakumar Jagadish Shetty, S. C. Gurumurthy, K. U. Kiran, Sachin Shet, "Hybrid polymer nanocomposites with tailored band gaps and UV absorption for advanced applications in optoelectronics and UV protection", July 2024, Polymers for Advanced Technologies 35(7), <http://dx.doi.org/10.1002/pat.6515>

Bhat, P., Sharma, S., Negi, D., Gopinathan, G., Shet, S., and Prajapati, P. M., "Investigation of $^{164}\text{Dy}(n,\gamma)^{165}\text{Dy}$ reaction using an Am-Be neutron source facility", International Journal of Modern Physics E, vol. 33, no. 12, Art. no. 2450060-178, WSPC, 2024. doi:10.1142/S0218301324500605.

2022

Sachin Shet, Kapil Deo Singh, S. Anand, and K.V. Subbaiah, "MCkEFF: An Indigenous Monte Carlo Code for estimation of Neutron Multiplication factor of Fissile Systems," Journal of Information and Computational Science, Volume 12 Issue 4 - 2022, Page 931 - 947. Link

Published Conference Proceedings:

P.M. Prajapati, Mahin Qureshi, A. Hingu, R.G. Pizzone, M. La Cognata, S.V. Suryanarayana, Sachin Shet and S. Mukherjee, " $^{13}\text{C}(\alpha, n)^{16}\text{O}$: The Source of Neutrons for the s-process main component", EPJ Web of Conferences 275, 02014 (2023), <https://doi.org/10.1051/epjconf/202327502014>

Sachin Shet, K.V. Subbaiah, P.M. Prajapati, Kapil Deo Singh, S. Anand, S.V. Suryanarayana, Validation of MCkeff code using ICSBEP results, Nuclear and Particle Physics Proceedings, Volumes 336–338, 2023, Pages 26–28, ISSN 2405–6014, <https://doi.org/10.1016/j.nuclphysbps.2023.07.008>. Guruprasad,

Sachin Shet, P.M. Prajapati, S.V. Suryanarayana, Meghna Karkera, K.V. Subbaiah, Y. Raviprakash, B.S. Shivashankar, Measurement of flux distribution of an AmBe neutron source and estimation of two group integral capture cross-sections, Nuclear and Particle Physics Proceedings, Volume 341, 2023, Pages 53–55, ISSN 2405–6014, <https://doi.org/10.1016/j.nuclphysbps.2023.09.018>.

Conference proceedings:

Sachin Shet and K.V. Subbaiah, “Monte Carlo Simulation: Optimization of computer memory and time”, Manipal Research Colloquium – 2017, BS-RF005.

Sachin Shet and K.V. Subbaiah, “Comparison of measured and calculated dose rates of Am-Be source with Monte Carlo simulation”, 21st National Symposium on Radiation Physics-2018, held at RRCAT, Indore during 5–7, March-2018.

Sachin Shet and K.V. Subbaiah, “Advances in Monte Carlo methods in Radiation Transport”, Indian Association for Radiation Protection International Conference – 2018, held at BARC, Mumbai during 16–20, January-2018.

Sachin Shet and K.V. Subbaiah, “Calculation of dose rates due to 4.44 MeV gamma emitted by Am-Be source.” Manipal Research Colloquium – 2018. MRC 2018-BS-01.

Sachin Shet and K.V. Subbaiah, “Development of Monte Carlo Code for the Estimation of Neutron Multiplication Factor in Fissile Materials”, DAE-BRNS conference on Indigenous nuclear fuel program in India, 31st January–2nd February –2019.

M. Mishra, Vikas M Shelar, S. Shet, P. K. Rath, “A suitable RNG for simulation of experimental Nuclear Physics”, Proceedings of the DAE Symp. on Nucl. Phys. 64 (2019) – Page – 914.

Sachin Shet and K.V. Subbaiah, “Development of Monte Carlo Code for The Assessment of Criticality of Fissile System”, Proceedings of Advances in Reactor Physics 2022, 18 – 21 May 2022, Page 388 – 391.

Sachin Shet and K. V. Subbaiah, “Development of Point Kernel Gamma Ray Shielding Code”, 23rd National Symposium on Radiation Protection (NSRP-23), 19– 21 Jan 2023.