CONRAD RIZAL, PhD

SMIEEE (USA) • CEng (The IET, UK)

conrad.rizal@seed-nanotech.com • +1 (905) 452-5200 • Ontario, Canada

LinkedIn • Google Scholar • ORCiD • Scopus

PROFESSIONAL SUMMARY

Globally recognized scientist and entrepreneur specializing in magneto-plasmonics, nanophotonics, and next-generation sensor technology. Author of 75+ peer-reviewed publications and holder of multiple international patents, with 50+ invited talks delivered across Europe, Asia, and the Americas. Currently CEO of NexPico Inc. and Principal Investigator at Seed NanoTech International Inc., bridging fundamental research with industrial commercialization. Chartered Electrical Engineer (IET, UK) and IEEE Senior Member with a track record of translating laboratory innovation into market-ready sensor products for healthcare, environmental monitoring, and smart industry.

CURRENT LEADERSHIP ROLES

- Chief Executive Officer — NexPico Inc., North Andover, MA, USA
- Chief Executive Officer & Principal Investigator (R&D) — Seed NanoTech International Inc., Ontario, Canada & Charleston, USA
- Chief Executive Officer & President — Sustainable Capacity Building and Innovation Foundation (SCBIF), Ontario, Canada

PROFESSIONAL EXPERIENCE

Chief Executive Officer | NexPico Inc.
North Andover, MA, USA • Nov 2024 – Present

Founded and lead a technology-driven startup developing next-generation pico-scale sensors and nanodevice innovations for industrial and medical applications.

Managing Director & Principal Investigator (R&D) | Seed NanoTech International Inc.
Brampton, ON, Canada • Nov 2016 – Present

Direct sensor development, nanomaterial innovation, and international research collaborations; founded and chair the ICAPMOT international conference series.

Research Scientist & Optical Engineer (R&D) | GEM Systems Inc.
Markham, ON, Canada • 2016 – 2019

Developed and field-tested high-sensitivity magnetometers for geophysical applications; contributed to product design and optical engineering.

MITACS Elevate Research Fellow / Globalink Advisor | York University
Toronto, ON, Canada • 2016 – 2023

Conducted joint academic-industry research on magneto-optical materials and sensing technologies; mentored international scholars under the MITACS Globalink program (2019–2023).

Visiting Research Scientist | Baylor University
Waco, TX, USA • 2016

Collaborated with Prof. Howard Lee on plasmonics and sensor technology research; managed advanced sputtering systems and designed nanophotonic experiments.

NSERC Postdoctoral Fellow, Center for Magnetic Recording Research | University of California, San Diego
La Jolla, CA, USA • 2014 – 2016

Led research projects on metamaterials, magnetic nanostructures, and multilayer sensor design and characterization.

Postdoctoral Fellow, Faculty of Applied Science | University of Victoria
Victoria, BC, Canada • 2012 – 2014

Directed biosensor research projects focused on highly sensitive detection platforms for biomedical applications.

Doctoral Researcher & Teaching Assistant | University of British Columbia
Vancouver, BC, Canada • 2006 – 2012

Led projects on magneto-optical sensors, ultrafast photonic switches, and nanoscale modulators; delivered lab-based electronics tutorials and mentored students in circuit and materials science labs.

Educator (Electrical, Materials & Computer Engineering) | Universities & Colleges across Canada and the USA

Canada / USA • 2012 – Present

Taught undergraduate courses and laboratory sessions across electrical, materials, and computer engineering programs.

EDUCATION

Ph.D. — Electrical and Computer Engineering (Photonics)

University of British Columbia, Vancouver, BC, Canada • 2006 – 2012 • GPA: 3.7/4.0

M.Sc. / D.Eng. — Electrical and Electronic Engineering (Nanoelectronics)

Muroran Institute of Technology, Muroran, Hokkaido, Japan • 1999 – 2004 • GPA: 4.0/4.0

Postgraduate Diploma — Human Resources Management

Algonquin College, Ottawa, ON, Canada • 2022 – 2023 • GPA: A

B.Sc. — Electrical and Electronic Engineering

Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh • 1988 – 1993 • GPA: 3.62/4.0

Intermediate in Science — Physical Group

Amrit Science College, Tribhuvan University, Kathmandu, Nepal • 1986 – 1988 • First Class (A+)

CORE EXPERTISE & TECHNICAL SKILLS

- Magneto-plasmonics, magneto-optics, and surface plasmon resonance (SPR) biosensor design
- Nanophotonic device design & simulation: COMSOL Multiphysics, Lumerical (FDTD, MODE, CHARGE), MATLAB
- Cleanroom nanofabrication: SOI wafer fabrication, mask layout (DW-2000), etching process control, device packaging
- Pilot-scale manufacturing, DFX (Design for Excellence), SPC (Statistical Process Control), DFR (Design for Reliability)
- Photonic integrated device modeling: photonic bandgap devices, grating couplers, ring resonators, multiplexers
- High-sensitivity magnetometer and biosensor product development

HONORS & FELLOWSHIPS

- Gold Medal (2013) — Awarded by the President of Nepal for global contributions to science and innovation
- NSERC Industrial R&D Fellowship — Government of Canada (2012)
- Mitacs Elevate & NSERC Postdoctoral Fellowship
- Volunteer Award — University of British Columbia (2008–2009)

EDITORIAL & PROFESSIONAL SERVICE

- Associate Editor — IEEE Access; Journal of Nanomedicine Research
- Editorial Board Member — Frontiers of Science; Journal of Nano Biomedicine
- Reviewer — IEEE Magnetics, APS D, Electronics, IOP, Springer Optical Communications, MDPI Magnetochemistry, MDPI Photonics
- Founder & Chair — ICAPMOT International Conference Series

SELECTED PUBLICATIONS (75+ TOTAL — FULL LIST ON GOOGLE SCHOLAR)

1. Rizal, C.; Malla, S. (2025). Optimized Magneto-optic Multilayer Structures for Enhanced Surface Plasmon Resonance Detection. American Journal of Physics, 138(7).
2. Sapkota, R.; Isik, S.; Suyanto, H.; Rupiasih, N.N.; Ingles, N.; Rizal, C. (2024). Sensor with Combined Plasmonic and Magnetic Activities. Biosensors and Bioelectronics: X.
3. Rizal, C.; Shimizu, H.; Mejía-Salazar, J.R. (2022). Magneto-Optics Effects: New Trends and Future Prospects for Technological Developments. Magnetochemistry.
4. Rizal, C.; Manera, M.G.; Ignatyeva, D.O.; Mejía-Salazar, J.R.; Rella, R.; Belotelov, V.I.; Pineider, F.; Maccaferri, N. (2021). Magnetophotonics for Sensing and Magnetometry toward Industrial Applications. Journal of Applied Physics.

5. Rizal, C.; Belotelov, V.; Ignatyeva, D.; Zvezdin, A.K.; Pisana, S. (2019). Surface Plasmon Resonance (SPR) to Magneto-Optic SPR. Condensed Matter, 4(2), 50.
6. Rizal, C.; Pisana, S.; Hrvoic, I.; Fullerton, E.E. (2018). Microstructure and Magneto-Optical Surface Plasmon Resonance of Co/Au Multilayers. Journal of Physics Communications.

SELECTED INVITED TALKS & GLOBAL ENGAGEMENTS

- Guest Lecture, “Emerging Trends in Magneto-Plasmonic Sensors,” IIT Delhi – International Nanotech Forum, India (2025)
- Keynote Speaker, “Magnetoplasmonic: Fundamentals and Industrial Applications,” Udayana University, Bali, Indonesia (2024)
- Guest Speaker, IEEE Photonics Society, MNNIT Allahabad, India (2024)
- Conference Chair, International Conference on Business, Management and Technology (ICAPMOT), Brampton, Canada (2025)
- 50+ invited talks delivered at academic and industrial institutions across Europe, Asia, and the Americas