

Dr. Lena Kranold

PHD IN ELECTRICAL ENGINEERING

Perth, Australia

☎ (+61) 8 6488 7036 | ✉ lena.kranold@uwa.edu.au | orchid-kranold | in lena-kranold

Experience and Skills

- Lecturer in biomedical engineering at the University of Western Australia.
- Research in applied and computational electromagnetics and medical device development at the Harry Perkins Institute for Medical Research.
- Postdoctoral researcher in MR implant safety: Industry-relevant and customized research for implant manufacturers, supervision of PhD students, lead of computational electromagnetics group meetings, contributing to standards development.
- PhD in Electrical Engineering; Multidisciplinary project on the development of a low power RF breast health monitor.
- Extensive understanding of computational and applied electromagnetics, bio-medical engineering, and clinical trials for medical devices.
- Arthur-Pilla Young Scientist Award at 2nd Annual Conference of the BioEM Society 2023.
- Received merit-based STARaCom scholarship for her PhD in Electrical and Computer Engineering at McGill University.
- Received merit-based scholarship for her M.Sc. in Electrical and Computer Engineering from the Stiftung der Deutschen Wirtschaft e.V. (Governmental Foundation of German Businesses).
- Graduated top of the class of the Faculty of Electrical and Computer Engineering from the University of Applied Sciences Kiel, Germany.
- Experienced in working in international and interdisciplinary teams.
- Experienced in conducting clinical trials with a designed and developed medical device prototype.
- Leadership experiences in the academic field as well as in non-profit organizations, including several IEEE Awards while being on the Board of Directors at IEEE Montreal Chapter.

Work Experience

University of Western Australia || Harry Perkins Institute of Medical Research

Perth, Australia

LECTURER - BIOMEDICAL ENGINEERING

Sep. 2023 - PRESENT

- Applied and computational electromagnetics, focused on biomedical applications and medical device development
- Lecturer in the Biomedical Engineering Course at UWA

IT'IS Foundation || ETH Zurich

Zurich, Switzerland

POSTDOCTORAL RESEARCHER APPLIED MEDICAL ELECTROMAGNETICS

Jan. 2021 - Aug. 2023

- Customized Research
- MR implant safety research

McGill University, Faculty of Engineering

Montreal, QC, Canada

RESEARCH ASSISTANT (CONTRACT), RESEARCH AND INNOVATION OFFICE OF THE DEAN

Aug. 2020 - Dec. 2020

- Supporting professors in the Faculty of Engineering with research grant applications
- Ensuring that grant applications are complete and ready for submission, guidelines are properly applied, and that information provided to the faculty is accurate
- Supporting the Associate Dean of Research and Innovation

McGill University, Department of Electrical and Computer Engineering

Montreal, QC, Canada

TEACHING ASSISTANTSHIP

Sep. 2016 - Apr. 2020

- ECSE 352/354: Electromagnetic Waves; ECSE 405/593: Antennas/Antennas and Propagation; ECSE 353: Electromagnetic Fields and Waves; ECSE 251/351: Electromagnetic Fields

University of Applied Sciences Kiel, Institut for Physics and Fundamentals in Electrical Engineering

Kiel, Germany

TEACHING ASSISTANTSHIP

Aug. 2012 - Feb. 2015

- **Teaching Assistant:** 4 hours / week; tutorials "Mathematics for Engineers I" for 1st semester and "Statistics" for 3rd semester students Sep. 2013 - Feb. 2015
- **Tutoring and Roberta Scout:** Assisting with robotics and programming classes for high school students from grade 7 to 10, and tutoring high school students in mathematics Oct. 2012 - Aug. 2015
- **Internship:** Setup and improvement of a lab stand for the calibration of shadow detectors for wind turbines Aug. 2012 - Nov. 2012

Education

University of Western Australia

Perth, WA, Australia

GRADUATE CERTIFICATE IN TERTIARY TEACHING

Apr 2024 - Apr 2025

- Foundations of Tertiary Teaching, Curriculum Design for Learning, Assessment and Feedback for Learning, Digital Technologies for Learning

McGill University

Montreal, QC, Canada

PHD IN ELECTRICAL ENGINEERING

Jan 2016 - Dec 2020

- **Laboratory:** RF Breast Cancer Detection Group within the Computational Electromagnetics Lab.
- **Thesis Title:** Time-Domain RF Breast Health Monitoring: Advancements and Optimization of Wearable Prototype for a Clinical Setup
PhD thesis defended Oct. 26, 2020; PhD degree completed Dec. 2020; PhD degree granted Feb. 2021
- **Research Topics:** Development of wearable RF Breast Health Monitor: Applied electromagnetics, antenna design, prototype development, clinical trials, data analysis
- **Supervisor:** Prof. Milica Popović

Christian-Albrechts-University of Kiel

Kiel, Germany

MASTER OF SCIENCE IN ELECTRICAL AND INFORMATION ENGINEERING, GPA: 1.5

Oct. 2013 - Dec. 2015

(scale 1.0 to 5.0; 1.0 = high distinction, 4.0 = pass, 5.0 = fail)

- **Thesis Title:** Spherical-multipole analysis of the wave propagation on a multi-layered dielectric sphere for applications in communication engineering.
- **Supervisor:** Prof. Ludger Klinkenbusch
- **Curtin University**, Perth, Australia *Semester Abroad Feb. - Jun. 2014*
Classes about Power Systems Analysis, Control Systems, Renewable Energy Principles, Aboriginal Studies

University of Applied Sciences Kiel

Kiel, Germany

BACHELOR OF ENGINEERING IN TECHNOLOGY MANAGEMENT AND MARKETING WITH A FOCUS ON RENEWABLE ENERGIES, GPA: 1.8

Sep. 2009 - Apr. 2013

(scale 1.0 to 5.0; 1.0 = high distinction, 4.0 = pass, 5.0 = fail)

- **Study Program:** Major in Electrical Engineering; Minor in Business Administration
- **Thesis Title:** Concept of a 10 kW small wind turbine for the University of Applied Sciences, Kiel.
- **California State Polytechnic University**, Pomona, CA, USA *Semester Abroad Sep. 2011 - Mar. 2012*
Classes about Power System Electronics, Communication and Project Management, Electronic Test Instrumentation with LabView, Global Regenerative Systems.
- **IC-SID 2011**, Leicester, UK *European Lifelong Learning Program Apr. 2011*
Organized by the Laurea University of Applied Sciences, Finland, GPA: 1.0 (scale 1.0 to 5.0; 1.0 = high distinction, 4.0 = pass, 5.0 = fail)
Theoretical and practical knowledge in Intercultural Communication and Service Innovation & Design Methods, application of acquired skills in a case study with local businesses.

Service to Profession

Bioelectromagnetics Flagship Conference (BioEM)

Cairns, WA, Australia

LOCAL ORGANIZING COMMITTEE MEMBER

June 2024 -

- **Tasks:** Organization of the annual international conference in Cairns, Australia; working with local organizing committee to acquire sponsoring, coordinate venues, catering and networking events surrounding the conference, liaise with technical program chairs for scheduling technical program and inviting of keynote speakers.

Bioelectromagnetics Society (BioEM)

Perth, WA, Australia

BOARD MEMBER

May 2024 -

- **Tasks:** Assisting with organization the annual international conference; working with and on the board to handle everyday business of the society; assisting with organization of the annual flagship international conference; member of Young Scientist award committee.

International Union of Radio Science (URSI)

Perth, WA, Australia

MEMBER OF THE TECHNICAL ADVISORY COMMITTEE - COMMISSION K

December 2023 -

- **Tasks:** Serve as member of the Technical Advisory Committee of Commission K.

School of Engineering at the University of Western Australia

Perth, WA, Australia

BOARD MEMBER

October 2023 -

- **Tasks:** Working with and on the board to handle everyday business of the School of Engineering.

International Society of Magnetic Resonance in Medicine (ISMRM)

Perth, WA, Australia

TRAINEE REPRESENTATIVE - SAFETY STUDY GROUP

May 2024 - May 2025

- **Tasks:** Serve as a bridge to the student and trainee members (STM) ISMRM community; work with the Study Group's Executive Committee to bring educational content and networking opportunities to the STM; highlight STM needs and their expertise to the executive committee.

International Microwave Biomedical Conference (IMBioC 2024)

Montreal, Canada

YOUNG PROFESSIONAL CHAIR AND TECHNICAL PROGRAM COMMITTEE MEMBER

June 2023 - June 2024

- **Tasks:** Organize Young Professional (YP) events during the conference; establishment of YP Award and serving on selection committee; serve as member of the Technical Program Committee; reviewer of submitted papers.

IEEE Montreal Engineering in Medicine and Biology Society Chapter

Montreal, QC, Canada

VICE-CHAIR OF THE SOCIETY CHAPTER

Jan. 2019 - Jan. 2022

- **Tasks:** Assisting with organization of IEEE EMBS events held in Montreal.

Bellairs Workshop on Microwave Imaging and Detection for Biomedical Applications

Holetown, Barbados

WORKSHOP CO-ORGANIZER

8-13 Mar. 2020

- **Tasks:** Assisting with organization of the workshop, website design, welcome and greeting of attendees.

IEEE Women in Engineering (WIE) Montreal Section

Montreal, QC, Canada

TREASURER OF THE AFFINITY GROUP

Jan. 2017 - Dec. 2018

- **Tasks:** Assisting with organization of IEEE WIE events held in Montreal.

Stiftung der Deutschen Wirtschaft e.V.

Germany

SCHOLAR

Mar. 2013 - Oct. 2015

- **Tasks:** Participation in the seminar program

Extracurricular Leadership

Ontario Collegiate Equestrian Association

ON, Canada

EAST ZONE MEMBERSHIP COORDINATOR

May 2019 - May 2020

- **Tasks:** Organization and management of memberships of all East Zone collegiate teams; points tracking for individual, team and horse standings; assisting other East Zone executive and teams; co-organizing the Finals 2020 competition and awards banquet.

McGill Equestrian Team

CAPTAIN AND TEAM REPRESENTATIVE

Montreal, QC, Canada

May 2017 - May 2019

- **Tasks:** Organization and management of the team, tryouts, and show entries; coordinating show travels; communicating with the Ontario Collegiate Equestrian Association on behalf of the team; co-hosting the McGill/University of Ottawa horse show competitions.

Pferdesport im Mittelpunkt Nortorf e.V.

Nortorf, Germany

SPORTS DIRECTOR

Oct. 2005 - Mar 2016

- **Tasks:** Organization and management of the annual horse show; supervision of the youth show team; organization of clinics.

Pferdesportverband Rendsburg-Eckernförde e.V.

Rendsburg, Germany

YOUTH SPEAKER

Mar. 2007 - Mar 2016

- **Tasks:** Organization and management of the annual youth show for the youth development programs; honoring of the regional champions.

Honors and Awards

- **Arthur-Pilla Young Scientist Award:** Young scientist award at the 2nd Annual Conference of the BioEM Society 2023
- **ISMRM Trainee Stipend:** Conference attendance stipend and finalist for ISMRM Safety Study Group poster competition 2022
- **STARaCom Scholarship:** Merit-based scholarship for the PhD project 2020-2021
- **STARaCom Collaborative Grant Supplement:** 2018-2020
- **McGill University Graduate Student Enhancement and Travel Awards:** 2017-2019
- **IEEE Award - Recognition for the reactivation of the IEEE EMBS Chapter:** Vice-Chair 2019
- **STARaCom Inauguration Graduate Student Poster Competition:** 3rd prize award at the student poster competition 2017
- **IEEE Award for Special Engagement for the IEEE Day 2018:** IEEE Montreal 2018
- **IEEE Award for the Most Active Affinity Group:** Treasurer of IEEE Women in Engineering - Montreal Section 2018
- **IEEE Canada Women in Engineering Group of the Year Award:** Treasurer of IEEE Women in Engineering - Montreal Section 2017
- **McGill Engineering Doctoral Award:** Arthur McAlear Fellowship, Gar Lam Yip Memorial Fellowship 2016-2018
- **Stiftung der Deutschen Wirtschaft e.V.:** Governmental merit-based scholarship by the Foundation of German Businesses 2013-2015
- **Graduate Top of the Class 2013:** Faculty of Computer Science and Electrical Engineering 2013

Skills & Qualifications

Consumer and Community

Western Australia Health Translation Network Research Education and Training Program (2024)

Involvement in Health Research

Western Australia Health Translation Network Introduction to CCI Masterclass (2024)

Western Australia Health Translation Network Writing in Plain Language Masterclass (2024)

Western Australia Health Translation Network Grant Writing Masterclass (2024)

English Language Skills

IELTS 8.5 (level C2, 2021)

Cambridge Business English Certificate Higher (level C1, 2011)

French Language Skills

Stage intensif d'immersion en français à l'Université du Québec à Chicoutimi (level B1, 2020)

Programming Experience

MatLab, C, Fortran, LabView, VBA, Python, LaTeX

Publications

Invited Talks

- **Kranold, L., "Microwave Imaging Systems in Breast Health Applications",** Keynote Lecture, URSI AP-RASC, Sydney, Australia, August 21, 2025.
- **Kranold, L., "Time-Domain RF Breast Health Monitoring & Novel Compact Dual-Band E-Field Generator for MR Safety Testing of AIMD",** Research Seminar, University of Sydney, Sydney, Australia, April 4, 2023.
- **Kranold, L., "Time-Domain RF Breast Health Monitoring & Novel Compact Dual-Band E-Field Generator for MR Safety Testing of AIMD",** Research Seminar, University of Western Australia, Perth, Australia, Feb 10, 2023.
- **Kranold, L., Goren, T., Kuster, N., "How hot can you get? Determining the envelope of electromagnetic exposure using anatomical phantoms",** Guest Lecture Graduate Course Bio-Electromagnetism, University of Bologna, Bologna, Italy, Nov 17, 2022.
- **Kranold, L., Goren, T., "In Silico Clinical Trials and RF Safety Assessment using Human Anatomical Models and Digital Twins",** in Doctoral School - Microwaves for emerging medical technologies, European Microwave Week 2022, Milano, Italy, Sep 24-30, 2022.
- **Kranold, L., Goren, T., Kuster, N., "Safety Risk Evaluation of Patients with Medical Implants: The Significance of Diverse Human Anatomical Models",** in Workshop on Electromagnetic Waves in Daily Life: Research Insights from Young Professionals, European Microwave Week 2022, Milano, Italy, Sep 24-30, 2022.
- **Kranold, L., "Estimating Temperature Rise, Thermal Dose, and Patient Risk from Deposited Power in MR Implant Safety",** in Medical Device Clinical Trials Conference, Taiwan FDA, virtual, Apr 28, 2022.
- **Kranold, L., Goren, T., Kuster, N., "MR Implant Safety: An Overview and Beyond of Current Techniques and Standards",** in Bellairs Workshop on Biomedical Applications of RF/Microwaves, Holetown, Barbados, Jan 14-21, 2022.
- **Kranold, L., Popovic, M., "RF Breast health monitoring: can mirrored data serve as the baseline?",** in Bellairs Workshop on Biomedical Applications of RF/Microwaves, Holetown, Barbados, Jan 14-21, 2022.

Journal Publications

- Fiore, R., Srinivasan, S., Waithman, J., Stanwix, P.L., **Kranold, L., "Melanoma Dielectric Properties from 2 to 18 GHz",** under review, 2025.
- **Kranold, L., Xi, J., Goren, T., Kuster, N., "Dosimetric Electromagnetic Safety of People with Implants: A Neglected Population?",** Bioelectromagnetics, 2025, doi: 10.1002/bem.70023.
- **Kranold, L., Boparai, J., Fortalez, L., Popović, M., "Skin Phantoms for Microwave Breast Cancer Detection: A Comparative Study",** in IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology, 2021, doi: 10.1109/JERM.2021.3084126.
- **Kranold, L., Popović, M., "RF Radar Breast Health Monitoring: System Evaluation with Post Biopsy Marker",** in IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology, 2020, doi: 10.1109/JERM.2020.3023514.
- **Kranold, L., Taherzadeh, M., Nabki, F., Coates, M., Popović, M., "Microwave Breast Screening Prototype: System Miniaturization with IC Pulse Radio",** in IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology, 2020, doi: 10.1109/JERM.2020.3029214.

Conference Publications

- Fiore, R., Stanwix, P., **Kranold, L.**, **"Development of Radiofrequency Tissue-Mimicking Phantoms for Validating Novel Devices for Skin Cancer Screening"**, in Proc. *URSI AP-RASC*, Sydney, Australia, August 17-22, 2025.
- Fiore, R., Stanwix, P., **Kranold, L.**, **"Radiofrequency Skin Cancer Screening: Development of Tissue-Mimicking Phantoms for System Validation"**, in Proc. *4th Annual Meeting of BioEM (former Bioelectromagnetic Society)*, Rennes, France, June 22-27, 2025.
- **Kranold, L.**, Xi, J., Goren, T., Kuster, N., **"People with Implants: A Neglected Population by EM Exposure Regulation?"**, in Proc. *IEEE International Microwave Biomedical Conference (IMBioC)*, Montreal, Canada, June 11-13, 2024.
- **Kranold, L.**, Goren, T., Lloyd, B., Farcito, S., Kuster, N., **"Development of Morbidly Obese Anatomical Phantoms for MR Safety Applications"**, in Proc. *2nd Annual Meeting of BioEM (former Bioelectromagnetic Society)*, Oxford, UK, June 18-23, 2023.
- Goren, T., **Kranold, L.**, Reboux, S., Luechinger, R., Samaras, T., Christ, A., Neufeld, E., Kuster, N., **"Methods of Translating the RF-Heating in ASTM F2182 Testing to Conservative Assessment of the Temperature Increase in the Patient Population"**, in Proc. *International Society for Magnetic Resonance in Medicine Safety Workshop*, New York City, USA, Oct 21-23, 2022.
- **Kranold, L.**, Goren, T., Rajan, S., Kuster, N., **"Importance of diverse anatomy in virtual population for risk assessment of magnetic resonance examination"**, in Proc. *1st Annual Meeting of BioEM (former Bioelectromagnetic Society)*, Nagoya, Japan, June 19-24, 2022.
- **Kranold, L.**, Capstick, M., Goren, T., Kuster, N., **"Tabletop exposure system for assessment of radiofrequency compatibility of medical implants with magnetic resonance examination"**, in Proc. *1st Annual Meeting of BioEM (former Bioelectromagnetic Society)*, Nagoya, Japan, June 19-24, 2022.
- **Kranold, L.**, Goren, T., Rajan, S., Kuster, N., **"Significance of Population Anatomical Variation for Conservative Assessment of Deposited Power of Lead Implants"**, in Proc. *International Society for Magnetic Resonance in Medicine Annual Meeting*, London, UK, May 6-12, 2022.
- **Kranold, L.**, Capstick, M., Goren, T., Kuster, N., **"Novel Compact Dual-Band E-Field Generator for MR Implant Safety Testing of Active Implantable Medical Devices"**, in Proc. *International Society for Magnetic Resonance in Medicine Annual Meeting*, London, UK, May 6-12, 2022.
- **Kranold, L.**, Ozmen, M., Coates, M., Popović, M., **"Microwave Radar for Breast Health Monitoring: System Performance Protocol"**, in Proc. *IEEE International Microwave Biomedical Conference*, Toulouse, France, Dec 14-17, 2020.
- **Kranold, L.**, Boparai, J., Fortaleza, L., Popović, M., **"Comparative Study of Tissue-Mimicking Phantoms for Microwave Breast Cancer Screening Systems"**, in Proc. *IEEE International Microwave Biomedical Conference*, Toulouse, France, Dec 14-17, 2020.
- **Kranold, L.**, Boparai, J., Fortaleza, L., Popović, M., **"A Comparative Study of Skin Phantoms for Microwave Applications"**, in Proc. *42nd Annual International Conferences of the IEEE Engineering in Medicine and Biology Society*, Montreal, Canada, Jul 20-24, 2020.
- Kendall, W., **Kranold, L.**, Hahn, C., Studebaker, S., Schwartz, J., Popović, M., **"A Flexible Antenna Array with Integrated Switching Matrix for Breast Cancer Detection"**, in Proc. *42nd Annual International Conferences of the IEEE Engineering in Medicine and Biology Society*, Montreal, Canada, Jul 20-24, 2020.
- Fortaleza, L., **Kranold, L.**, Popović, M., **"Flexible 16-Antenna System for Microwave Breast Screening: NB vs. UWB Performance"**, in Proc. *2020 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting*, Montreal, Canada, Jul 5-10, 2020.
- Boparai, J., **Kranold, L.**, Fortaleza, L., Popović, M., **"Dielectric Properties of Skin-Mimicking Tissue Models in the 5 – 20 GHz Range"**, in Proc. *2020 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting*, Montreal, Canada, Jul 5-10, 2020.
- **Kranold, L.**, Popović, M., **"Microwave Radar Breast Screening: System Interaction with the Post-Biopsy Clip"**, in Proc. *14th European Conference on Antennas and Propagation*, Copenhagen, Denmark, Mar 15-20, 2020.
- **Kranold, L.**, Quintyne, C., Coates, M., Popović, M., **"Microwave Radar for Breast Screening: Initial Clinical Data with Suspicious-Lesion Patients"**, in Proc. *41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Berlin, Germany, July 23-27, 2019.
- **Kranold, L.**, Quintyne, C., Coates, M., Popović, M., **"Clinical Study with Time-Domain Microwave Breast Monitor: Analysis of the System Response and Patient Attributes"**, in Proc. *13th European Conference on Antennas and Propagation*, Krakow, Poland, Mar 29 - Apr. 5, 2019.
- **Kranold, L.**, Coates, M., Popović, M., **"Variability in Clinical Data Obtained with Flexible Time-Domain Radiofrequency Breast Monitor"**, in Proc. *18th International Symposium on Antenna Technology and Applied Electromagnetics*, Waterloo, Canada, Aug. 19-22, 2018.
- **Kranold, L.**, Perez Santa Maria, M., Coates, M., Popović, M., **"Recent Advancements in Time-Domain Breast Health Screening: Observations on the Phantom Stability and Wearable Hardware"**, in Proc. *12th European Conference on Antennas and Propagation*, London, UK, Apr. 9-13, 2018.
- **Kranold, L.**, Kezzo, M., Popović, M., **"Observations on Phantom Stability and Antenna Arrangement for Microwave Tracking of Breast Tissue Changes"**, in Proc. *32nd International Union of Radio Sciences General Assembly and Scientific Symposium*, Montreal, Canada, Aug. 19-26, 2017.
- **Kranold, L.**, Hazarika, P., Popović, M., **"Investigation of Antenna Array Configurations for Dispersive Breast Models"**, in Proc. *11th European Conference on Antennas and Propagation*, Paris, France, Mar 19-24, 2017.