

Dr. Lena Kranold

PHD IN ELECTRICAL ENGINEERING

Perth, Australia

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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.
- 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.
- Professional English language skills, native in the German language, and basic understanding of French.

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

PHD CANDIDATE

Jan. 2016 - Dec. 2020

- Development of RF Breast Health Monitoring Prototype
- Conducting of clinical trials with the wearable breast health monitoring prototype
- Mentoring of Master's and Bachelor's students

McGill University, Department of Electrical and Computer Engineering

Montreal, QC, Canada

TEACHING ASSISTANTSHIP

Sep. 2016 - Apr. 2020

- ECSE 352/354: Electromagnetic Waves (TA: Winter 2020, Fall 2018, 2017, 2016, Grading: Winter 2019, Fall 2017)
- ECSE 405/593: Antennas/Antennas and Propagation (Grading: Winter 2020, 2019, Fall 2016)
- ECSE 353: Electromagnetic Fields and Waves (TA: Fall 2019, Grading: Fall 2018, 2017)
- ECSE 251/351: Electromagnetic Fields (TA: Winter 2017)

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

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

IEEE Montreal Engineering in Medicine and Biology Society Chapter

Montreal, QC, Canada

VICE-CHAIR OF THE SOCIETY CHAPTER

Jan. 2019 - Jan. 2022

- 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

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

IEEE Women in Engineering Montreal Section

Montreal, QC, Canada

TREASURER OF THE AFFINITY GROUP

Jan. 2017 - Dec. 2018

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

Stiftung der Deutschen Wirtschaft e.V.

Germany

SCHOLAR

Mar. 2013 - Oct. 2015

- Participation in the seminar program

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 Engineering in Medicine and Biology Society Chapter:** Vice-Chair of the Society Chapter IEEE Engineering in Medicine and Biology - Montreal Section 2019
- **McGill Engineering Doctoral Award:** Arthur McAlear Fellowship, Gar Lam Yip Memorial Fellowship 2016-2018
- **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
- **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

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 throughout the season for individual, team and horse standings; assisting other East Zone executive and teams where necessary; co-organizing the Finals 2020 competition and awards banquet.

McGill Equestrian Team

Montreal, QC, Canada

CAPTAIN AND TEAM REPRESENTATIVE

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.

Hobbies

Horseback riding, playing volleyball, reading, learning French, knitting

Journal Publications

- **Kranold, L.,** Boparai, J., Fortaleza, 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

- **Kranold, L.,** Goren, T., Loyd, 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 Leaded 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.