

Research Group Members: Prof Rainer Cramer, CChem FRSC



Professor Rainer Cramer, CChem FRSC
Vordiplom-Mathematics,
Vordiplom-Physics,
Diplom-Physics (Münster);
Dr. rer. nat. (Münster/Vanderbilt)

Professor of Mass Spectrometry and
Bioanalytical Sciences

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Publications

<http://scholar.google.co.uk/citations?user=pwJSnIAAAAJ&hl=en>

Current Members

Selahaddin Sezgin, Postdoctoral Research Associate



I obtained my Ph.D. in Chemistry from the Technical University of Dortmund (Germany), focusing on applications of MALDI imaging mass spectrometry (IMS) such as investigating and mapping the metabolization of drugs in animals and the biosynthesis, transportation and storage processes of secondary natural products with medicinal relevance in plants. Leaving the area of IMS, I have entered the field of high-throughput screening (HTS) mass spectrometry evaluating the benefits of HTS-MS-capable platforms using MALDI and electrospray ionization (ESI) for screening biochemical assays, which so far could not be addressed using conventional (optical) HTS techniques, in the early stage of active compound discovery within the Crop Science sector of the Bayer AG (Germany). In October 2021, I joined Prof. Cramer's research group and am part of an interdisciplinary team of (bio)chemists and virologists (University of Reading), clinicians (Royal Berkshire Hospital) and instrument developers (Waters Corporation) collaborating in a research project, which aims to

enable large-scale detection and identification of clinical microbial pathogens and rapid AMR assays using liquid atmospheric pressure (LAP) MALDI MS on a modified bench-top Q-TOF instrument.

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Sanduru Thamarai Krishnan, Postdoctoral Research Associate



My key research interest lies in the development of mass spectrometry (MS)-based methods for application in biomarker discovery and disease diagnosis; extending the use of clinical datasets to improve patient-centric predictions, diagnosis, treatment and outcomes. I obtained my Master of Science (Bionanotechnology) at the Gachon University (2017) in South Korea and my PhD in Molecular Biology at Monash University (2022) in Australia with a research project aimed at the “Development of high-resolution mass spectrometry methods for the diagnosis of complex diseases”. In August 2022, I joined Prof. Cramer’s research group at the University of Reading as a post-doctoral researcher. Currently, I use LAP-MALDI MS technology to identify endogenous biomarkers in patient biofluids and apply statistical models to classify infectious disease groups and healthy cohorts for the application of rapid disease diagnosis. This project is funded by the EPSRC and is a collaboration with Waters Corporation and the Royal Berkshire Hospital, UK. Other than research I love playing badminton, driving cars and exploring new places.

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Evita Hartmane, PhD Student



In 2013 I graduated from the University of Warwick with a BSc(Hons) degree in Biochemistry. During the final year research project, I got my first hands-on experience with Mass Spectrometry (MS) as I was investigating possible calibration approaches for T-wave ion mobility mass spectrometry (TWIMS) to be used for protein analysis. Soon after graduation, I joined an analytical laboratory, Marchwood Scientific Services, based in Southampton, UK, where I was involved in performing tests for persistent organic pollutants (POPs) using mass spectrometric methods. In September 2016, I joined Prof Rainer Cramer's group as a PhD student. The project is aimed at the development of laser desorption (LD) ionization source for real-time reaction monitoring. The project is a collaboration between the Chemistry and Meteorology Departments of the University of Reading, and Waters Corporation, jointly supervised by Prof Rainer Cramer, Dr Christian Pfrang, Prof Giles Harrison and Prof Michael Morris.

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Sophie Lellman, PhD Student



My first job after finishing school was at UCB Pharma, Slough, in the analytical and physical chemistry team, where I was involved in the profiling of drug compounds by LC-MS to support medicinal chemists. I then went to university, and I graduated from the University of Surrey with a BSc (Hons) degree in Biochemistry in 2018. During my studies, I undertook an industrial placement year at Thermo Fisher, Basingstoke, where I worked in the microbiology research and development department, working on a new microbial identification tool. I joined the University of Reading in 2018, as a PhD student in Prof. Rainer Cramer's group. My project is focused on the development of liquid AP-MALDI MS for microbial profiling and biotyping. The project is supervised by Prof. Rainer Cramer and Dr. Kevin Lovelock, in collaboration with Dr. Shabnam Iyer from the Royal Berkshire Hospital.

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Henriette Krenkel, PhD Student



In 2012, I started my BSc in Chemistry at the Technische Universität Dresden (Germany). After two years, I decided to participate in a binational programme with the Ecole européenne de chimie, polymères et matériaux in Strasbourg (France) as part of the University of Strasbourg. This double-diploma programme allowed me to attend courses in France for two years and specialise in analytical chemistry. As part of the course programme I also undertook two work placements, one of them at the Helmholtz Centre for Environmental Research – UFZ in Leipzig (Germany) in the Department of Effect-Directed Analysis. Afterwards I came back to Dresden in order to receive the MSc degree in Chemistry in 2017, thanks to my master thesis in which I investigated the possibility of the breakdown of antibiotics in liquid systems by employing genetically modified yeast strains. In the autumn term of 2018, I joined the Cramer research group for my PhD, trying to optimise the liquid AP-MALDI ion source and sample preparation as well as exploring possible applications.

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Elliott Mwando Jr, PhD Student



In 2012, I graduated with a BSc degree in Chemistry (Single major) from the University of Botswana (Gaborone, Botswana). Thereafter I pursued an MSc in Analytical Chemistry at the same institution under Professor Kwenga Sichilongo's research group. The focus of my MSc was on HPLC MS/MS method development of antiretroviral (ARVs) drugs in human blood plasma – A contrast of extraction efficiencies using selected sample preparation techniques. After graduating in 2016, I worked as a full-time demonstrator for the University's Department of Chemistry. In 2018, I was awarded a commonwealth scholarship for developing countries to pursue a PhD at the University of Reading with Professor Rainer Cramer as my supervisor. My work will involve nanoHPLC MS/MS

method development of ARVs in human blood plasma. The method will be used for therapeutic drug monitoring purposes for patients in Botswana.

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Bob Challen, PhD Student



In 2013, I started my BSc (Hons) in Analytical Chemistry and Forensic Sciences at Coventry University, graduating in 2016. Following this, I decided to continue my studies in analytical sciences by beginning an MSc in Analytical Sciences and Instrumentation at the University of Warwick, undertaking a thesis project in the supercharging of small molecules using a novel supercharging source and FT-ICR MS. After graduating in 2017, I began working in the quality control department for a bespoke pharmaceuticals company in Didcot, utilising a wide range of analytical techniques to ensure API quality and purity from raw material to finished product. After leaving this position in 2018, I took a quality control position in a specialist pharmaceuticals company in Ruislip, analysing specially formulated liquid suspensions of APIs. In 2019, I joined the University of Reading as a PhD student in Prof. Rainer Cramer's group. My project is focused on developing liquid AP-MALDI MS towards the goal of real-time, online measurements of hydrogen-deuterium exchange (HDX) and enzyme assay kinetics.

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Lily Adair, PhD Student



In 2018, I began a BSc (Hons) in Biomedical Sciences at Sheffield Hallam University, graduating in 2022 with a First Class degree. During the third year of my studies, I undertook a year-long industrial placement at Labcorp Drug Development, York, as a Quality Control analyst. My main responsibilities included performing batch release and stability analysis on active pharmaceutical ingredients and finished products in a GMP regulated environment, utilising a plethora of analytical techniques. Techniques performed included but were not limited to Imaged Capillary Isoelectric Focusing, ELISA-based methods and compendial methods. I also assisted with the establishment and validation of methods for routine analysis. Once I graduated, I was further employed by Labcorp Drug Development. A highlight of my time at Sheffield Hallam University was my final year research project, in which I investigated the possibility to detect blood in soil and on evidential items using a Proteomics/MALDI-combined approach. In the autumn term of 2022, I joined the University of Reading, undertaking a PhD in Prof. Rainer Cramer's research group. My project, supervised by Prof. Rainer Cramer and Prof. Ian Jones, is focused on developing liquid AP-MALDI mass spectrometry for microbial profiling and clinical biotyping.

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Zoe McShane, Part-time MSc Student



In 2018, I obtained First Class Honours BSc in Chemical and Pharmaceutical Science from the Galway-Mayo Institute of Technology (GMIT), now under the name of Atlantic Technology University (ATU). During my bachelor's degree I had an 8-months placement at The State Laboratory Backweston Campus, Cellbridge, Ireland. I worked in the Animal Feedingstuffs department analysing feed materials, additives, mineral mixtures, and compound feeds testing for antibiotics levels, declared nutrients/micro-nutrients and levels of toxic compounds. This placement was invaluable for my early career as I got a true feel for research and the importance of analytical testing. Following from my undergraduate degree I started a graduate program at Almac, Craigavon, Ireland in the API Stability Testing team. I then moved to England and worked at GSK, Maidenhead in the consumer healthcare business as a Quality Specialist, analysing raw materials and final products as well as stability testing of final products. During my time at GSK, I also had the opportunity to work at the research site in Weybridge developing and validating new testing methods on ICP, IC and HPLC. I then trained as an occupational hygienist for a year in the production side of GSK, working at several pharmaceutical and consumer healthcare sites. In 2021, I joined Johnson Matthey as a Research Scientist focused on particle engineering of API molecules and their subsequent analysis. In January 2022, I joined Professor Rainer Cramer's research group, undertaking a part-time master's degree with my project focused on coupling LC to AP-MALDI MS for analysis of proteins, peptides and other biomolecules.

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Past Members

2021-2022 **Ioanna Tsokou** MSc student
2021-2022 **Kavya Clement** Postdoctoral Research Associate
2020-2022 **Artur Liszka** MSc student
2015-2021 **Ryan Williamson** PhD student
2018-2020 **Cristian Piras** Postdoctoral Research Associate
2013-2020 **Jeff Brown** Part-time PhD student
2014-2019 **Emanuele Scollo** Part-time PhD student
2014-2018 **Oliver Hale** PhD student / Research Assistant
2011-2018 (**Attila**) **Frank Torma** Part-time PhD student
2018 **Lisa Deininger** Postdoctoral Research Assistant
2017 **Tamara Skarke** DAAD summer student
2015-2016 **Rebekka Meeks** Part-time MSc student
2016 **Andy Pocock** BMSS summer student
2014-2017 **Pavel Ryumin** Postdoctoral Scientist
2014 **Rosie Nicholson** EPSRC vacation bursary student
2013-2014 **Louise Barker** MSc student
2013-2014 **Shivani Singh** MSc student
2013-2014 **Ryan Williamson** MChem / BMSS summer student
2013-2014 **Jessica Evans** MChem / ACTF summer student
2013 **Laurence Bindschedler** Visiting Scientist
2012-2016 **Kanjana Wiangnon** PhD student
2010-2015 **Chhaya Patole** PhD student / Research Technician
2009-2014 **Brian Flatley** PhD student
2009-2010 **Joscelyn Sarsby** MChem / BMSS summer student
2007-2008 **Oliver Kollas** MSc student
2006-2011 **Davinia Mills** Research Technician
2006-2010 **Mark Towers** PhD student
2005-2013 **Celia Smith** Research Technician
2005-2012 **Laurence Bindschedler** Senior Research Associate
2005-2011 **Sally Ewen** PhD student
2005-2011 **Trevor Gibson** Senior Research Technician
2005-2010 **Melanie Bottoms** PhD student

2005-2009 Kate Cooke PhD student
2005-2009 Ali Tiss Postdoctoral Scientist
2005-2007 Magnus Palmblad Senior Research Fellow
2003-2009 Richard Jacob PhD student
2003-2004 Musarat Kabir MRes student
2003-2004 Annalisa Valisa Visiting PhD student
2003-2004 John Sinclair Scientific Officer
2003-2004 Mark Weeks Postdoctoral Scientist
2001-2005 Bertran Gerrits Research Assistant / PhD student
2001-2004 Andrew Thompson Postdoctoral Scientist
2001-2004 Denis Calnan Higher Scientific Officer
2000-2004 Pedro R. Cutillas PhD student / Postdoctoral Scientist
2000-2004 Malcolm Saxton Scientific Officer
2000-2003 Pedro R. Cutillas PhD student
2000-2001 Daniel Spencer Higher Scientific Officer
1999-2003 Sarah Hart PhD student
1999-2000 Jens-Oliver Koopmann Postdoctoral Scientist
1999-2000 Nick Totty Research Associate
1998-2004 Steve Corless Higher Scientific Officer
1997-2001 Robert Chalkley PhD student