

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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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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Agata Kowalczyk, PhD Student



In 2021, I graduated with a BSc (Hons) in Analytical Chemistry and Forensic Science. During that time, I undertook a placement working on the analytical side of manufacturing and development of diagnostic immunoassays, and as an analyst in the characterisation of metals and recyclable

materials mainly with ICP-OES, XRF and wet chemistry techniques. After completing my BSc, I spent a year working on the development of an electrochemical pH sensor for environmental applications, which was a collaboration between the university and an instrument company. Then, I completed an MSc in Analytical Science and Instrumentation and undertook an MS-based project. It focused on studying various fragmentation and data acquisition approaches in 2D MS and their impact on the quality of proteomic MS and MS/MS data. All these varied experiences made me realise that I enjoy interdisciplinary research, and the versatility and breadth of MS techniques. Because of that, I joined the University of Reading as a PhD student in Prof. Rainer Cramer's group. My project is focused on applications of Liquid Atmospheric Pressure-MALDI MS (LAP-MALDI MS), with the aim to utilise it for studying real-time enzyme kinetics and assessing protein structural features with hydrogen-deuterium exchange (HDX-MS).

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Diana Rangel Casillas, MSc Student



I did my bachelor's degree in Chemistry at the National Autonomous University of Mexico (UNAM). My thesis was about speciation and quantification of pesticides in air around Mexico City using gas chromatography coupled with mass spectrometry (GC-MS) in the Atmospheric Science Center (ASC). During my stay at the ASC, I gained experience in gas chromatography, statistics and speciation of organic compounds as well as their quantification using good laboratory practices and various extraction methods such as using ultrasound baths to remove organic compounds from the matrix. I have attended several analytics congresses about analytical chemistry, presenting "Distribution of polycyclic aromatic hydrocarbons between the organic phase and particulate of atmospheric aerosol" and "Determination of HAP, OCL, BPCS Y DEP B in the atmospheric aerosol from Norway using CG-EM/IQN", and have co-authored 7 academic papers on organic compounds in air. In January 2024, I joined the University of Reading as a MSc student in Prof. Cramer's group.

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Past Members

2022-2024 Zoe McShane Part-time MSc student

2018-2023 Henriette Krenkel PhD student

2018-2023 Sophie Lellman PhD student

2016-2023 Evita Hartmane PhD student
2021-2022 Ioanna Tsokou MSc student
2021-2022 Kavya Clement Postdoctoral Research Associate
2020-2022 Artur Liszka Part-time 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