Kingdom of Morocco

Global Conference

The Role of Artificial Intelligence in Advancing the Implementation of the Chemical Weapons Convention

22 – 24 October 2024
Rabat, Morocco

INTRODUCTION

Kingdom of Morocco

Artificial intelligence (AI) is advancing rapidly and emerging as a powerful enabling technology that is increasingly being integrated into many disciplines and technologies. It has myriad applications and touches nearly all aspects of daily life, often in ways that people do not even notice. In chemistry and related fields, AI is accelerating progress in addition to making associated processes cheaper, faster, and more effective.

Leveraging this technology could afford a number of benefits and opportunities across a range of areas related to the Chemical Weapons Convention and the work of the Organisation for the Prohibition of Chemical Weapons (OPCW). The increasing prominence of AI has prompted heightened attention not only to its potential benefits but also to its associated risks. Given its inherent dual-use nature, AI is susceptible to misuse, potentially posing a threat to the object and purpose of the Convention.

Considering AI's novelty, its unprecedented pace of development, and its rapid inclusion in many fields, it behoves the OPCW to identify and understand the potential impacts AI might have on its mission to achieve a world free of chemical weapons, to prevent the re-emergence of chemical weapons, and to promote the peaceful uses of chemistry. The Global Conference will play a pivotal role in this process. The principal objectives of the Conference are:

1. Enhance the understanding of AI and its role and impact on the implementation of the Convention through discussions and dialogue with leading global experts.
2. Help contextualise developments in AI within the broader international landscape.
3. Inform future policy discussions and initiatives to advance international cooperation mechanisms to address the evolving risks and threats posed by AI-enabled technologies in the field of chemical security and chemical disarmament.

Leading global experts from the fields of science, industry, civil society, and government have convened at this Global Conference to develop a comprehensive understanding and appreciation of AI and its role and impact on the implementation of the Convention. This will be invaluable for the Organisation to assess how best to seize opportunities and mitigate risks.

The Conference is jointly organised by the Government of the Kingdom of Morocco and the Organisation for the Prohibition of Chemical Weapons, with the kind support of OPCW Member States including the People's Republic of China, the French Republic, the Federal Republic of Germany, the State of Qatar, the Republic of Korea, and the United Kingdom of Great Britain and Northern Ireland.*

Following the event, the conference proceedings will be released to serve as a valuable resource and reference for future engagements and discussions.

* Donors to the Conference are publicly acknowledged in Conference documents where contributions are equal to or above EUR 2,500

PROGRAMME – DAY 1

Tuesday 22 October 2024

09:30 – 10:00	*Registration (desk located after security in the Ministry of Foreign Affairs)*
	All Conference activities will take place in the Balafrej Venue unless otherwise indicated
10:00 – 12:45	**Opening Ceremony** **Welcome Address by H.E. Mr Nasser Bourita** Minister of Foreign Affairs, African Cooperation and Moroccan Expatriates, Kingdom of Morocco **Inaugural Address by H.E. Ambassador Fernando Arias** Director-General, Organisation for the Prohibition of Chemical Weapons *Moderator:* **Ismail Chekkori** Director of Global Issues, Ministry of Foreign Affairs, African Cooperation and Moroccan Expatriates
10:50 – 11:30	*Group photo, followed by coffee break and networking (Balafrej Venue foyer)*
	Keynote Speeches *Keynote Speakers:* **Mallory Stewart** Assistant Secretary for the Bureau of Arms Control, Deterrence, and Stability (ADS), U.S. Department of State **Greta Heydenrych** Executive Director, International Union of Pure and Applied Chemistry (IUPAC) **Bahrin Asmawi** Chief Commercial Officer, PETRONAS Chemicals Group Berhad and Chief Executive Officer, PETRONAS Chemicals Marketing (Labuan) **Catherine Colthart** Assistant Director for Chemical Biological Radiological Nuclear Explosives (CBRNE) and Vulnerable Targets, INTERPOL **Stefan Kordasch** Head of Division for Biological and Chemical Weapons Disarmament, Federal Foreign Office of Germany *Briefing on Berlin Conference on Artificial Intelligence and Weapons of Mass Destruction*

Tuesday 22 October 2024

12:45 – 14:30 *Lunch and networking (Balafrej Venue foyer)*

14:30 – 16:15 **Session 1 – Advances in AI for Chemistry: Innovations, Applications, and Future Directions**

This opening technical session will offer a brief overview of the current state of AI in chemistry, featuring examples that illustrate the wide range of its applications. The six speakers will make short presentations, supported by slides. To encourage productive discussions, there will be two opportunities for audience Q&A: one after the first three speakers and another after the second three speakers.

Moderator:

Joana Iljazi
Head Engineer – CBRN, Google DeepMind

Speakers:

Teodoro Laino
Distinguished Research Scientist, IBM Research Europe

Rafiqul Gani
Chief Executive Officer, PSE for SPEED

Zheng (Arthur) Li
Head of Growth, Chemical.AI

Kamesh Reddi
Senior Scientist, Council of Scientific and Industrial Research – Indian Institute of Chemical Technology

José L Medina-Franco
Professor and Head of the Computer-Aided Drug Design Group, National Autonomous University of Mexico

Molly Strausbaugh
Director, Scientific Content and Commercial Chemistry, CAS

Rapporteurs:

Robert MacKnight
Research Scientist, Carnegie Mellon University

Johannes (Jim) Ottele
Inspector, OPCW Industry and Technology Advancement Unit

16:15 – 16:45 *Coffee break and networking (Balafrej Venue foyer)*

PROGRAMME – DAY 1

Tuesday 22 October 2024

16:45 – 18:15 **Session 2 – AI Governance: Balancing Ethics, Policy, and Innovation**

Emerging technologies often present risks of misuse, as well as opportunities. This session will explore the fundamental importance of the responsible use of AI. The current challenges and limitations of AI regulations and the integration of responsible use principles into policy will be discussed. In this session, the speakers will each make an opening statement which will be followed by a panel discussion. Time is allocated at the end of the session for audience Q&A.

Moderator:

Hajar Mousannif
Full Professor and Senior Lead, Cadi Ayyad University

Panellists:

Chen Jiahao
Director of AI/ML, New York City Office of Technology and Innovation *(attending in his personal capacity)*

Nazareen Ebrahim
AI Ethics Lead, Socially Acceptable

Irakli Beridze
Head of the Centre for Artificial Intelligence and Robotics, UN Interregional Crime and Justice Research Institute (UNICRI)

Henrik Hahn
Chief Digital Officer, Evonik

Edson Prestes e Silva Junior
Full Professor, Federal University of Rio Grande do Sul

Rapporteurs:

Ahmed Irfan Bin Mamat Ariffin
Senior Manager of Information Systems, PETRONAS Chemicals Group Berhad (PCG)

Rohan Perera
Special Adviser on International Cooperation Programme Planning and Coordination, OPCW International Cooperation Branch

19:00 – 20:30 *Welcome reception hosted by the Kingdom of Morocco (Balafrej Venue foyer)*

PROGRAMME – DAY 2

Wednesday 23 October 2024

09:00 – 10:30 **Session 3 – Leveraging AI for Peaceful Uses of Chemistry**

This session will examine the expanding role AI is playing in the peaceful uses of chemistry. It will also highlight AI's contribution to achieving a number of United Nations Sustainable Development Goals, including Zero Hunger (SDG 2) and Good Health and Well-being (SDG 3). Each speaker will make a short presentation, supported by slides. Time is allocated at the end of the session for audience Q&A.

Moderator:

Jonathan Forman
Science and Technology Advisor, Pacific Northwest National Laboratory

Speakers:

Michael Kuiper
Senior Research Scientist, Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Neeraj Sabhnani
Associate Vice President and Head of Analytics, Coromandel International Limited

Luke Rogers
Vice President of Innovation, On Demand Pharmaceuticals

Ganna (Anya) Gryn'ova
Associate Professor, University of Birmingham

Bramley Maetsa
IT Digital Innovation Enablement Lead, Sasol

Rapporteurs:

Tongning Wu
Deputy Director of the AI Institute, China Academy of Information and Communications Technology

Jo Eun Kim
Associate Programme Officer, OPCW International Cooperation Branch

10:30 – 11:00 *Coffee break and networking (Balafrej Venue foyer)*

PROGRAMME – DAY 2

Wednesday 23 October 2024

11:00 – 12:30

Session 4 – AI in Chemical Security and Counter-Terrorism

This session will focus on how AI can be used to strengthen counter-terrorism efforts, and specifically to prevent chemical terrorism. The speakers will each make a brief presentation and then engage in a moderated discussion to explore how AI-based tools and approaches could be used to strengthen chemical security and prevent chemical terrorism. Some of the challenges will also be highlighted. Time is allocated at the end of the session for audience Q&A.

Moderator:

Günter Povoden
Head of Section Chemistry, CBRN Defence Centre, Austrian Armed Forces

Speakers:

Scott Watson
Criminal Intelligence Analyst, INTERPOL

Altrine Obiero
CBRN Security Expert, Ministry of Interior and National Administration of Kenya

Tim Doggett
Chief Executive Officer, Chemical Business Association

Miryang Kim
Senior Assistant Director, Korea Customs Service

Rapporteurs:

Yasar Ayaz
Professor, National University of Sciences and Technology Pakistan and Chairman, National Center of Artificial Intelligence

Cormac O'Reilly
Senior Policy Officer, OPCW Office of Strategy and Policy

12:30 – 14:00 *Lunch and networking (Balafrej Venue foyer)*

Wednesday 23 October 2024

14:00 – 15:00 **Session 5 – Enhancing Chemical Safety with AI**

Building on Session 4, the topic of chemical security is closely intertwined with chemical safety and cannot be addressed in isolation. Advances in AI have led to the development of numerous innovative tools and approaches to enhance chemical safety, many of which are increasingly being adopted across the chemical industry. This session will explore these novel solutions while also addressing the potential challenges AI may introduce to chemical safety. Each speaker will deliver an opening statement, followed by a panel discussion. Audience Q&A will be held at the end of the session.

Moderator:

Catharina Müller-Buschbaum
Managing Director, Accenture GmbH

Panellists:

William J Zamora
Group Leader of the Computational Biophysics, Biology and Bioinformatics Group, University of Costa Rica

Thomas Hartung
Professor, Johns Hopkins Bloomberg School of Public Health

Sérgio Luis Correa Ferreira
Independent Consultant

Khawaja Fahad Iqbal
Chief Executive Officer, Rising Automation and Co-Principal Investigator, National Center of Artificial Intelligence

Rapporteurs:

Mohammed Lachkar
Professor and Investigator, Sidi Mohamed Ben Abdellah University

Rohan Perera
Special Adviser on International Cooperation Programme Planning and Coordination, OPCW International Cooperation Branch

15:00 – 15:30 *Coffee break and networking (Balafrej Venue foyer)*

PROGRAMME – DAY 2

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15:30 – 16:45 **Session 6**

This session has been divided into two parallel streams in order to provide more detailed insights into AI in the technical and policy domains.

Session 6a – AI in Chemistry in the Spotlight *(Balafrej Venue)*

This session will offer a deeper exploration of how AI is being used to create new chemicals and automate chemical production. It is specifically tailored to help non-scientists gain a clearer understanding of these technical advances. The two speakers will provide presentations, supported by slides, and time is allocated at the end of the session for audience Q&A.

Moderator:

Fanny Chu
Data Scientist, Pacific Northwest National Laboratory

Speakers:

Teodoro Laino
Distinguished Research Scientist, IBM Research Europe

Luke Rogers
Vice President of Innovation, On Demand Pharmaceuticals

Rapporteurs:

Nour El Houda Chaoui
Director of the Digitalization Pole and Professor of Computer Science, Ibn Tofail University

Sarah Clapham
Science Policy Officer, OPCW Office of Strategy and Policy

Session 6b – AI and Policy *(Benhima Venue)*

This session will explore some of the policy aspects relating to AI in more detail. The two speakers will provide presentations, supported by slides, and time is allocated at the end of the session for audience Q&A.

Wednesday 23 October 2024

Moderator:

He Liming
Assistant Dean, Artificial Intelligence Research Institute, Shanghai Jiao Tong University

Speakers:

Chen Jiahao
Director of AI/ML, New York City Office of Technology and Innovation *(attending in his personal capacity)*

Alexander Ghionis
Research Fellow in Chemical Biological Security, Harvard Sussex Program

Rapporteurs:

Axel Soto
Researcher, National Scientific and Technical Research Council (CONICET)

Sergey Fadeev
Data Analyst, OPCW Declaration Assessment Team

16:45 – 18:00 **Session 7 – Exploring the Challenges of AI to Implementation of the Chemical Weapons Convention**

This session will expand discussions on the potential challenges and risks posed by AI within the framework of the Chemical Weapons Convention. Various aspects will be explored, including the verification regime of the Convention and preventing the re-emergence of chemical weapons. Session 7 will consist of a panel discussion followed by audience Q&A.

Moderator:

Mylène Bonnaud
Chemical and Explosive Policy Officer, French General Secretariat for National Defence and Security, Prime Minister Services

Panellists:

Elena Vodopolova
First Secretary, Permanent Representation of the Russian Federation to the OPCW

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Shannon Zanatta
Defence Scientist, Defence Science and Technology Group, Australian Department of Defence

Keunhong Jeong
Professor, Korea Military Academy

Carolyn Browne
Director of Verification, OPCW Verification Division

Rapporteurs:

Tijeni Delleji
Senior Engineering Project Manager, Military Research Center, Tunisia

Daan Noort
Head of Laboratory, OPCW Laboratory

PROGRAMME – DAY 3

Thursday 24 October 2024

09:00 – 10:30

Session 8 – Role of AI in Strengthening Implementation of the Chemical Weapons Convention

This session will explore how AI could be harnessed by the OPCW to strengthen the implementation of the Convention. Speakers from the OPCW Technical Secretariat will share insights from their respective areas and then participate in a panel discussion on the opportunities, tools, and equipment AI offers to bolster implementation of the Convention and how the OPCW can effectively leverage them. Time is allocated at the end of the session for audience Q&A.

Moderator:

Sara Peacock
Senior Science and Technology Manager, Defense Threat Reduction Agency (DTRA)

Speakers:

Daan Noort
Head of Laboratory, OPCW Laboratory

Johannes (Jim) Ottele
Inspector, OPCW Industry and Technology Advancement Unit

Rohan Perera
Special Adviser on International Cooperation Programme Planning and Coordination, OPCW International Cooperation Branch

Peter Hotchkiss
Science Policy Adviser, OPCW Office of Strategy and Policy

Rapporteurs:

Marc-Michael Blum
Managing Director, Blum - Scientific Services

Sarah Clapham
Science Policy Officer, OPCW Office of Strategy and Policy

PROGRAMME – DAY 3

Thursday 24 October 2024

10:30 – 11:15 **Session 9 – Rapporteur Summaries**

Speakers:

Robert MacKnight
Research Scientist, Carnegie Mellon University

Ahmed Irfan Bin Mamat Ariffin
Senior Manager of Information Systems, PETRONAS Chemicals Group Berhad (PCG)

Tongning Wu
Deputy Director of the AI Institute, China Academy of Information and Communications Technology

Yasar Ayaz
Professor, National University of Sciences and Technology Pakistan and Chairman, National Center of Artificial Intelligence

Mohammed Lachkar
Professor and Investigator, Sidi Mohamed Ben Abdellah University

Nour El Houda Chaoui
Director of the Digitalization Pole and Professor of Computer Science, Ibn Tofail University

Axel Soto
Researcher, National Scientific and Technical Research Council (CONICET)

Tijeni Delleji
Senior Engineering Project Manager, Military Research Center, Tunisia

Marc-Michael Blum
Managing Director, Blum - Scientific Services

11:15 – 11:40 **Closing Ceremony**

Closing Address by H.E. Ambassador Odette Melono
Deputy Director-General, Organisation for the Prohibition of Chemical Weapons

Closing Address by Mr Ismail Chekkori
Director of Global Issues, Ministry of Foreign Affairs, African Cooperation and Moroccan Expatriates

12:00 – 13:30 *Lunch and networking (Balafrej Venue foyer)*

SIDE EVENTS – DAY 3

Thursday 24 October 2024

Motivations and Locations for the Misuse of AI and Strategic Challenges for the Chemical Weapons Convention *(Balafrej Venue)*

Time	13:30 – 14:30
Institution or organisation	University of Sussex Business School
Presenter	**Alexander Ghionis** Research Fellow in Chemical Biological Security, Harvard Sussex Program

Modern Chemical Supply Chains: Leveraging AI-Enabled Solutions to Respond to Disruptive Forces while Advancing the SDGs *(Benhima Venue)*

Time	13:30 – 14:30
Institution or organisation	CAS
Presenter	**Molly Strausbaugh** Director, Scientific Content and Commercial Chemistry

Leveraging AI: Enhanced Game Theory for Strategic Management of Chemical Weapons Threats *(Balafrej Venue)*

Time	14:35 – 15:05
Institution or organisation	University of Rome Tor Vergata
Presenter	**Alba Iannotti** Research Fellow, Industrial Engineering Department

SIDE EVENTS – DAY 3

Thursday 24 October 2024

Artificial Intelligence in Global Security: Analyzing CWC Compliance and Emerging Chemical Weapons Threats *(Benhima Venue)*

Time	14:35 – 15:05
Institution or organisation	University of Rome Tor Vergata
Presenter	**Colomba Russo** Research Fellow, Industrial Engineering Department

Application of AI to Chemistry Molecular Design, Synthesis and Automation *(Balafrej Venue)*

Time	15:10 – 15:40
Institution or organisation	Chemical.AI
Presenter	**Zheng (Arthur) Li** Head of Growth

AI in Surveillance: Balancing Ethical Oversight in Global Security *(Benhima Venue)*

Time	15:10 – 15:55
Institution or organisation	Socially Acceptable
Presenter	**Nazareen Ebrahim** AI Ethics Lead

SIDE EVENTS – DAY 3

Thursday 24 October 2024

Prediction of Physicochemical Properties and Development of an Identification Method for New Chemicals Using AI *(Balafrej Venue)*

Time	15:45 – 16:00
Institution or organisation	Korea Military Academy
Presenter	**Keunhong Jeong** Professor, Korea Military Academy

BIOGRAPHIES

Co-Hosts

H.E. Mr Nasser Bourita

Mr Nasser Bourita is the current Minister of Foreign Affairs, African Cooperation and Moroccan Expatriates. A diplomat by career, Mr Bourita has climbed all the ranks of the diplomatic function. He has held many key positions within the ministry: from the head of United Nations Main Organs Unit, to head of United Nations Division (2003-2006) and then director of United Nations and International Organizations (2006-2009). In 2011, he was named secretary-general of the Minister of Foreign Affairs, a position he assumed until his appointment on 6 February 2016 by His Majesty the King, May God Assist Him, as a delegate minister to the Ministry of Foreign Affairs and International Cooperation.

Mr Bourita was designated by His Majesty the King Mohammed VI, May God Assist Him, as the Minister of Foreign Affairs, African Cooperation and Moroccan Expatriates, on 5 April 2017. His Majesty the King renewed His trust in the Minister on 9 October 2019 by appointing him Minister of Foreign Affairs, African Cooperation and Moroccan Expatriates.

H.E. Ambassador Fernando Arias

H.E. Ambassador Fernando Arias was appointed Director-General of the OPCW in December 2017 by the Conference of the States Parties at its 22nd Session. He began his four-year term of office on 25 July 2018. He was re-appointed for a second term by the 26th Session of the Conference of States Parties (25 July 2022 – 24 July 2026). Prior to his appointment as OPCW Director-General, he served as the Ambassador Extraordinary and Plenipotentiary of Kingdom of Spain to the Kingdom of the Netherlands, Permanent Representative to the OPCW, and Ambassador Permanent Representative to the United Nations in New York.

Ambassador Arias has been a career diplomat since 1979 and has extensive multilateral experience regarding weapons of mass destruction as well as bilateral experience in Africa, Asia, Western and Eastern Europe, North America, and South America.

H.E. Ambassador Odette Melono

Ambassador Odette Melono joined the Technical Secretariat on 14 January 2019 as the Deputy Director-General. She is a career diplomat and foreign policy expert.

Prior to joining the Secretariat, Ms Melono served as the Ambassador of the Republic of Cameroon to the Kingdom of the Netherlands and the Grand Duchy of Luxembourg from 2008 to 2018. During that time, she was also the Permanent Representative to the OPCW and served as the Chairperson of the OPCW Executive Council from May 2016 to May 2017.

Ms Melono was the first ever full Cameroonian Ambassador to serve in the Kingdom of the Netherlands. Before her appointment as Ambassador to the Netherlands, Ms Melono served at the Presidency of the Republic of Cameroon since 1995.

Keynote Speakers

Bahrin Asmawi

Bahrin Asmawi is the current Chief Commercial Officer of PETRONAS Chemicals Group (PCG) where he is responsible for PCG's overall commercial excellence. He also serves as the CEO of PETRONAS Chemicals International Holdings Sdn. Bhd, and PETRONAS Chemicals Marketing (Labuan) Ltd.

Joining PETRONAS in 1997, he has held a myriad of different roles such as CEO of PETRONAS Chemicals Marketing (Thailand) and Head of Strategic Planning & Ventures (SPV), Refining, Marketing & Trading (RMT). He has a Bachelor of Petroleum Engineering from the University of Texas at Austin and took part in the Senior Management Development Program of Duke Corporate Education.

Catherine Colthart

Catherine Colthart is currently serving as INTERPOL's Assistant Director for Chemical Biological Radiological Nuclear Explosives (CBRNE) and Vulnerable Targets. Through an intelligence-driven approach, Ms Colthart manages INTERPOL programmes that support global law enforcement efforts to mitigate CBRNE incidents and protect critical infrastructure.

Ms Colthart is seconded from the Royal Canadian Mounted Police (RCMP) where she has been a Police Officer for 28 years. She has a varied background, having worked in all levels of policing. In 2018, Ms Colthart was appointed as RCMP's Commissioned Officer in Charge of CBRNE Operations, which she held until her secondment to INTERPOL in May 2023. Prior to this, she held positions in National Security, Operational Policy and Compliance, as a Crisis Negotiator, and Commercial Crime investigator, to name a few. Ms Colthart received the Queen's Diamond Jubilee Medal for her extensive work over and above providing RCMP employees with mental health assistance, crisis negotiating skills, and volunteer work in the community at a Crisis Line, whilst also providing suicide prevention training.

Greta Heydenrych

Greta Heydenrych is the Executive Director of the International Union of Pure and Applied Chemistry (IUPAC). IUPAC is the standards organization in chemistry and a long-time cooperation partner of the Organisation for the Prohibition of Chemical Weapons (OPCW).

Before taking up her role at IUPAC in 2022, Greta Heydenrych worked in the academic publishing industry for 15 years. During this time, she served as Editor-in-Chief of several society-owned journals. She also gained experience in portfolio development and business data analytics. Greta Heydenrych holds a PhD in computational chemistry from the University of Stellenbosch and has done post-doctoral studies at the Philipps University Marburg in Germany.

Keynote Speakers

Stefan Kordasch

Dr Stefan Kordasch is a German diplomat and currently serving as Head of Division at the Federal Foreign Office in Berlin, covering Chemical and Biological Weapons Disarmament.

He took over his current function in 2021, after four years at the Political section of the German Embassy in Moscow. His career has included further postings in Russia (at Germany's consulate-generals in Novosibirsk and St. Petersburg), at Geneva, Paris (including a secondment to the French Foreign Office), and London. He has been dealing with arms control issues in particular as counsellor at Germany's Permanent Mission to the Conference on Disarmament in Geneva 1997-2001 and as deputy head of the Nuclear Arms Control and Non-Proliferation Division at Foreign Office headquarters in Berlin 2008-12. He holds a doctorate in Economics from Göttingen University.

Mallory Stewart

Mallory Stewart is the Assistant Secretary for the Bureau of Arms Control, Deterrence, and Stability (ADS) at the U.S. Department of State. Before joining the bureau, she was a Special Assistant to President Biden and Senior Director for Arms Control, Disarmament, and Nonproliferation at the National Security Council (NSC).

Before the NSC, she led Sandia Laboratories' Cooperative Monitoring Center in its efforts to facilitate scientific engagement for global security. From 2015 to 2017, Ms Stewart was Deputy Assistant Secretary for Emerging Security Challenges and Defense Policy in what was then called the Bureau of Arms Control, Verification and Compliance. Beginning in 2002, Ms Stewart was an attorney-adviser in the Department of State's Office of the Legal Advisor, where she worked on numerous legal issues focusing on nonproliferation. Alongside representing the U.S. before the Iran-U. S. Claims Tribunal, she was the lead lawyer on the 2013 U.S.-Russian Framework for the Elimination of Syrian Chemical Weapons. She holds an A.B. from Harvard College and a J.D. from Stanford Law School.

Invited Experts

Ahmed Irfan Bin Mamat Ariffin *(Speaker, Session 9)*

Ts. Ahmed Irfan Bin Mamat Ariffin is a seasoned professional with 20 years of experience in the field of ICT and cybersecurity. He holds a BSc (Hons) in Computing Science from Staffordshire University, and advanced Diplomas in Software Engineering and Information Technology from the Asia Pacific Institute of Information Technology. He also holds certification in ITIL with and professional experience in Certified in Risk and Information Systems Control, and Certified Information Systems Security Professional. He is also a member of Professional Technologist in the Malaysia Board of Technologists.

Currently as Senior Manager of Information Systems, he has been instrumental in shaping the digital vision and driving the strategy for PETRONAS Chemicals Group. He also oversees digital governance, cybersecurity, risk management, and ICT technical advisory covering both domestic and international operations. These achievements highlight his extensive experience and contributions in driving digital transformation, enhancing cybersecurity, and ensuring IT and OT compliance within a major global corporation.

Yasar Ayaz *(Speaker, Session 9)*

Prof Dr Yasar Ayaz, a PhD graduate in Robotics and Machine Intelligence from Tohoku University, Japan, is the Founding Chairman of Pakistan's National Center of Artificial Intelligence (NCAI) at NUST. He established Pakistan's first Department of Robotics & Artificial Intelligence at NUST in 2010, serving as its head until 2020, and remains a full Professor. He also holds the title of Specially-Appointed Professor at Tohoku University. Dr Yasar has authored over 150 international publications, won prestigious awards, and holds 3 patents with more under review. He has delivered over 60 keynote talks globally and secured projects worth over two billion PKR. His accolades include the President's Pride of Performance Award, PEC Engineers' Excellence Award, and IEEE Lifetime Achievement Award. He is also the Vice President of the Monbukagakusho Alumni Association of Pakistan.

Invited Experts

Irakli Beridze *(Speaker, Session 2)*

Irakli Beridze, PhD, is the Head of the Centre for Artificial Intelligence and Robotics at UNICRI, United Nations. He is supporting UN Member States and international organisations on the strategies, action plans and roadmaps focusing on the opportunities and challenges of artificial intelligence and leveraging its potential in a responsible manner, from the perspective of justice, crime and other security threats, including terrorism.

Since 2017, he serves as the Head of the first UN Centre on AI and oversees the management of research, policy, governance, cybersecurity and direct capacity budling AI projects globally. He is a member of various international task forces, including the World Economic Forum's Global Artificial Intelligence Council. He is regularly lecturing about exponential technologies, artificial intelligence, and international security. Mr Beridze has numerous publications in international journals and magazines and frequently quoted in media on the issues related to AI. Irakli Beridze is a Georgian national.

Marc-Michael Blum *(Speaker, Session 9)*

Dr Blum worked in the laboratory of the OPCW from 2012 to 2019 - from 2017 onward as the Head of OPCW Laboratory. In 2018 he was team leader for the OPCW's missions to Salisbury and Amesbury following the poisoning of the Sergey Skripal. From 2010 to 2012 he was a Director's Fellow at Los Alamos National Laboratory (NM, USA) and from 2006 to 2010, he conducted contract R&D working on enzymes-based systems for CW detoxification. Dr Blum holds a German master's degree equivalent in chemistry from the Technical University of Braunschweig and a PhD in biochemistry from the University of Frankfurt where he worked on the nerve agent degrading enzyme DFPase. In 2008 he finished an MA in "War in the modern world" at the department of War Studies – King's College London. He provides consultancy services in the field of analysis of CBRN agents and holds the rank of Lieutenant Colonel in the Bundeswehr Reserve (CBRN troops).

Mylène Bonnaud *(Moderator, Session 7)*

Mylène Bonnaud is an expert Chemical and Explosives Policy Officer at the French General Secretariat for National Defense and Security, Prime Minister Services. She has been working on the implementation of the CWC for the last 8 years and has actively participated in several OPCW events on Chemical Security and Chemical Threats. She is also in charge of evaluating the impact of Emerging Technologies on Global Chemical Security. Her latest work focuses on possible improvement of the implementation, understanding and outreach of the CWC through artificial intelligence but also on its limits and how to prevent its malicious use.

Rachid Brahmi

Professor Rachid Brahmi earned his PhD in Applied Chemistry from the University of Poitiers, France, in 1994. His expertise lies in the preparation, characterisation, and evaluation of solid catalysts. His research at the "Institut de Chimie des Milieux et Matériaux de Poitiers, France (IC2MP)", focused on the application of catalysis in civil and tactical propulsion, as well as the development of new propellants and high-energy materials (HEM). He has been involved in several research projects related to propulsion, in collaboration with the French Space Agency (CNES), the European Space Agency (ESA), AIT-Austria, ONERA, and SAFRAN. Subsequently, he joined Chouaib Doukkali University in El Jadida, Morocco, where he was appointed as a full professor of higher education. Currently, his research focuses on the application of catalysis for water and air pollution control, as well as the production of green hydrogen from renewable sources.

Carolyn Browne *(Speaker, Session 7)*

Carolyn Browne is the Director of Verification within the Technical Secretariat of OPCW, responsible for the verification of declarations made twice a year by the 193 member states. This includes verifying the destruction of chemical weapons (CW), tracking the controlled production of and trade in CW-precursor chemicals, and providing assistance in cases of alleged use of CW or discoveries of potentially CW-related material. She is a member of the OPCW senior management team.

Carolyn worked for the British Government (Foreign and Commonwealth Office) from 1985 to 2018. Her previous roles include British Ambassador to Kazakhstan (2012 – 2017), and British Ambassador to Azerbaijan (2007 – 2011). She also served in Moscow, New York (United Nations) and Brussels (European Union). She holds a DPhil in Bacterial Genetics (University of Oxford). She speaks English, Russian, French, Azerbaijani and Kazakh.

Nour El Houda Chaoui *(Speaker, Session 9)*

Nour El Houda Chaoui is a Moroccan expert in digital transformation and artificial intelligence. She is currently the Director of the Digitalization Pole at Ibn Tofail University in Kenitra, where she leads initiatives to integrate emerging technologies into higher education. Previously, she held academic positions at the University of Fez and the University of Agadir, contributing extensively to research and teaching in computer science. Her work focuses on the application of AI in healthcare and education, developing innovative solutions to improve medical diagnostics and educational systems. In addition, she is active in fields such as cybersecurity, immersive technologies, and the use of the Metaverse in education. Nour El Houda serves on the Editorial Advisory Board for the Journal of Applied Research in Higher Education and is the Country Director for the International HETL Association. She has also led numerous national and international projects focused on integrating technology into education and governance.

Invited Experts

Ismail Chekkori *(Speaker, Closing Ceremony; Moderator, Opening Ceremony)*

Mr Ismail Chekkori, is the Head of the Department of Global Issues at the Ministry of Foreign Affairs, African Cooperation and Moroccan Expatriates since July 2017 where he manages a portfolio that includes security and social issues including transnational organised crime, countering terrorism and corruption, NATO, non-proliferation and disarmament, as well as issues pertaining to human and humanitarian rights, climate change and sustainable development. Within the same Department, Mr Chekkori has been Head of Division of Security and Social Global Issues (2013-2017).

Mr Chekkori's career also includes postings abroad, the latest of which was as Minister Plenipotentiary within the Moroccan Permanent Mission to the United Nations in New York, where he was in charge of legal issues (2006-2013). During this period, the Kingdom of Morocco has chaired the Security Council Counter Terrorism Committee, from 2012-2013. Mr Chekkori was also Vice-Consul at the Kingdom of Morocco Consulate General in Den Bosch, the Netherlands (1997-2001).

Mohammed Cherkaoui

Mr Mohammed Cherkaoui is a doctor in electrochemistry. He joined the Ibn Tofaïl University of Kenitra (Morocco) in 1988 where he assumed various responsibilities. Currently, Mr Cherkaoui holds the position of Director of the High National School of Chemistry (Kenitra). He has conducted several research projects in the areas of surface treatment and the environment (h-index 26), including protection of copper electronic components and study of tin plating electrolytes and silicon pickling baths (STMicroelectronics) and corrosion of cooling circuits rolling mill at the Jorf al Asfar site (SONASID).

He holds national and international patents: Autocatalytic bath and Ni-P alloy deposition process, French patent No. FR2754831 publication date 04-24-1998, Alloy deposition bath, US Patent references 5614003 5718745-2000 and Water treatment process for the protection of brass-based cooling circuits, Moroccan patent filing number 315962009.

Fanny Chu *(Moderator, Session 6a)*

Dr Fanny Chu (USA) is a data scientist in the Chem-Bio Informatics team within the Chemical & Biological Signatures Group at Pacific Northwest National Laboratory (PNNL). Her specialisations include the development of instrumental methods and data analytic capabilities to advance detection and characterisation of novel and emerging chemical and biological signatures, to address challenges in chemical forensics and biodefence missions. She currently leads efforts to develop algorithms using cheminformatics and artificial intelligence/machine learning for quantitatively assessing sample similarity where mass spectrometry data in chemical forensics is often sparse and limited. Prior to joining PNNL in 2020, she was a Livermore Graduate Scholar at Lawrence Livermore National Laboratory. She received her MS in forensic science and PhD in chemistry from Michigan State University, and a BS in chemistry from State University of New York at Binghamton.

Tijeni Delleji *(Speaker, Session 9)*

Tijeni Delleji, a Tunisian national, is a research scientist and head of the Research Valorization Unit at the Military Research Center, where he also serves as project manager. With a strong focus on AI and deep learning, Delleji has led cutting-edge projects, including the development of AI-powered anti-drone systems utilising advanced machine learning, computer vision, and thermal imaging technologies to enhance threat detection and mitigation. His interdisciplinary expertise spans defence technology and AI-enabled security systems, making him a key contributor to discussions on the role of AI in the implementation of the Chemical Weapons Convention. Delleji's work is particularly relevant to the conference's goals of exploring AI's impact on chemical safety, and the prevention of chemical terrorism. His contributions align with the broader international efforts to enhance chemical security through AI, focusing on hazardous chemical detection, risk management, and international cooperation within the regulatory and technological frameworks.

Tim Doggett *(Speaker, Session 4)*

Tim Doggett is Chief Executive Officer of the Chemical Business Association, a multi-award-winning trade association representing the UK's chemical supply chain.

He is extremely active in leading and advocating for the sector, not only in the UK but across the world, interacting and engaging with multiple stakeholders at all levels.

Tim is an influential member of various key groups and works with organisations such as the OPCW and INTERPOL, he is a member of the G7 Global Partnership and also the Industry Advisory Group for the Global Congress on Chemical Security and Emerging Threats.

An inspirational and compelling leader, he is a Chartered Fellow of the Chartered Institute of Logistics and Transport, and a Fellow of the 'Society of Leadership Fellows' at St George's House, Windsor Castle. He is also a Board Director and Treasurer of the Trade Association Forum, founder of Generation STEAM and an Ambassador for Generation Logistics.

Invited Experts

Nazareen Ebrahim *(Speaker, Session 2)*

Nazareen Ebrahim, from South Africa, is an accomplished AI ethicist with a solid foundation in media, technology, and communications, built over 20 years. As the AI Ethics Lead at Socially Acceptable, she is dedicated to building a responsible digital citizenry and is deeply involved in public education on AI ethics and digital democracy. Nazareen serves as an advisory board member of the South African AI Association and is a board director at the Minara Chamber of Commerce, where she leads the technology portfolio.

Recently, she joined the Centre for AI and Policy Development as a research group member with their AI Policy Clinic. Additionally, Nazareen is developing her first book, “Africa’s 5IR: How Ethics will Lead the Technology Revolution,” due in early 2025.

She continues to share her insights as a keynote speaker, panellist, and guest tech commentator on South Africa’s Cape Talk with Lester Kiewet every Tuesday morning.

Mohamed El Ouali

Mohamed El Ouali is a Moroccan Senior R&D Engineer and Business Development Manager at the College of Computing, Mohammed VI Polytechnic University (UM6P), with extensive experience in AI-driven solutions for industrial systems. His expertise includes the modelling and simulation of granulation drying systems and phosphoric acid production, where he integrates advanced algorithms to optimise process efficiency. Mohamed has led key projects focusing on energy efficiency and the reduction of carbon footprints in industrial processes. He holds a Master’s in Data Science, a Master’s in Hydrogen Production from UM6P, and an Engineering Degree in Automation and Electrical Engineering.

Ahmed Errami

Ahmed Errami is currently an administrator-teacher in the Department of Process Engineering at the École Supérieur de Technologie in Casablanca, Morocco and specialises in molecular materials. He has 13 years’ experience managing the forensic laboratories of the police force in Morocco. Dr Errami holds a doctorate in materials chemistry, obtained from the Université Paul Sabatier in Toulouse, France. He also obtained his undergraduate and master’s degrees in chemistry from the same university.

Hicham Es-Soufi

Dr Hicham Es-Soufi is a Professor at the National Higher School of Chemistry (NHSC), Ibn Tofail University, Kenitra, Morocco. He has also served as the Director of Studies, Director of Research and Development, and Professor at the Higher School of Engineering, ESGCNT, Meknès, Morocco. Dr Es-Soufi is a member of the editorial board for three international scientific journals and has peer-reviewed for over 60 international scientific journals. His primary research focus lies in the research and development of new materials, with a particular emphasis on studying the physical-chemistry of materials for applications in electrochemical energy storage, electrostatic energy storage, wastewater treatment, corrosion, and gamma radiation shielding. To date, Dr Es-Soufi has authored more than 40 publications in international scientific journals. His research focused on the study of new glassy materials for gamma radiation shielding.

Sérgio Luis Correa Ferreira *(Speaker, Session 5)*

Sérgio Ferreira is a Brazilian lawyer and chemical engineer with 40 years of experience in the industrial sector. He serves as a consultant for major companies, specialising in process safety and the application of artificial intelligence to address key industrial challenges. As a member of the Brazilian Bar Association (OAB) in the State of Bahia, Sérgio contributes to regulatory discussions on AI. He is currently focused on developing innovative AI safety solutions for the industrial sector, leveraging his dual expertise in law and engineering to drive safety advancements.

Jonathan Forman *(Moderator, Session 3)*

Jonathan Forman is a Science and Technology Advisor at Pacific Northwest National Laboratory (United States). He currently works as a science advisor for chemical and biological arms control, disarmament and non-proliferation issues, and has served as a scientific adviser to delegations to both the Chemical and Biological Weapons Conventions. Dr Forman was the first person to hold the post of Science Policy Adviser at the OPCW, where he facilitated the work of OPCW's Scientific Advisory Board and its science and technology review processes, which included a focus on AI technologies. Prior to OPCW, Dr Forman worked for a series of early phase (startup) life-science companies developing platforms for genomic, immunoassay, and cell capture applications; and as a consultant for process and product development of biological assay platforms. He holds a PhD in chemistry from the California Institute of Technology.

Invited Experts

Rafiqul Gani *(Speaker, Session 1)*

Rafiqul Gani is currently the CEO of PSE for SPEED, a company he founded in 2018 and is a distinguished adjunct professor at HKUST (Guangzhou), at ECUST (Shanghai), and at Széchenyi István University (Győr). He worked at DTU (Denmark) as professor in systems design, where he also founded the Computer Aided Process-Product Engineering Center in 1996. Gani serves as editor for the Sustainable Production & Consumption journal and is also a member of the editorial advisory boards of several international journals. Gani is a member of the Danish Academy of Science, a former president of the European Federation of Chemical Engineering, and Fellow of the AIChE and IChemE. At PSE for SPEED Company, Gani helps to develop, implement, and employ state-of-the-art PSE methods and tools augmented by AI techniques to solve a wide range of problems of industrial and research significance, reliably, efficiently, and very rapidly.

Alexander Ghionis *(Speaker, Session 6b)*

Dr Alexander Ghionis has been researching chemical and biological weapons prohibition regimes for the past decade, with a particular focus on the Organisation for the Prohibition of Chemical Weapons (OPCW).

As part of his longstanding interest in the OPCW's evolution, his current work explores the implications of AI from a CBW convention-based perspective, while also examining contemporary challenges facing the Organisation.

Alongside his role in the Harvard Sussex Program, he is also a non-resident Fellow for UNIDIR's Weapons of Mass Destruction Programme, an associate researcher on the German research project CBWNet, and a member of the Chemical Weapons Convention Coalition.

Ganna (Anya) Gryn'ova *(Speaker, Session 3)*

Ganna (Anya) Gryn'ova is an Associate Professor of Computational Chemistry at the University of Birmingham, UK. After receiving bachelor's and master's degrees in chemistry in her home country of Ukraine and, in 2014, a PhD from the Australian National University, she worked as a postdoctoral researcher at École Polytechnique Fédérale de Lausanne (Switzerland, 2014-2019) and a junior group leader at the Heidelberg Institute for Theoretical Studies (Germany, 2019-2024). Dr Gryn'ova's research group "Computational Carbon Chemistry" uses theoretical and computational chemistry, physics, and materials science in combination with chemical machine learning to explore and exploit diverse functional organic and hybrid materials and molecules for applications in catalysis, environmental remediation, and renewable energy. Dr Gryn'ova is a recipient of several prestigious grants and awards, including the IUPAC-Solvay International Award for Young Chemists for one of the five most outstanding PhD theses in the general area of the chemical sciences worldwide (2015) and the ERC Starting Grant from the European Research Council (2021).

Najoua Haddaoui

Prof Dr Najoua Haddaoui, Professor of Higher Education at the National School of Chemistry, obtained her PhD in Environmental Engineering from the Mohammadia School of Engineers in 2018, after obtaining a State Engineer's degree in Industrial Environment and Safety from the National School of Mines of Rabat in 2013. She held several positions in different companies in the private sector, including Study Engineer and Quality, Health, Safety and Environment Manager. Subsequently, she opted for higher education in the public sector. She teaches several subjects related to chemical engineering (fluid mechanics, turbulence, boundary layer, thermal transfers, etc), industrial safety, including prevention against chemical risk, and environmental and quality management.

Henrik Hahn ***(Speaker, Session 2)***

Henrik Hahn is a seasoned executive with extensive management experience in the chemical industry. As the Chief Digital Officer of Evonik, a specialty chemicals company based in Essen (Germany), he has been instrumental in driving the company's digital transformation since 2016 and set out the group's strategy for artificial intelligence. Henrik began his career with Evonik in 1999 and has worked in various roles in technology, innovation and strategy, including assignments in the USA and Belgium. One of his most notable engagements was setting up a corporate start-up in the field of battery technology. Henrik is also a passionate advocate for digitalisation with the VCI, the Association of the German Chemical Industry and serves as a member of the EPSRC Peer Review College (UK). He holds a doctorate in mechanical engineering and also has a degree in industrial engineering with a focus on information economics.

Thomas Hartung ***(Speaker, Session 5)***

Thomas Hartung, MD PhD, is German living in the US. He is the Doerenkamp-Zbinden-Chair for Evidence-based Toxicology in the Department of Environmental Health and Engineering at Johns Hopkins Bloomberg School of Public Health and the Whiting School of Engineering, Baltimore. He also holds a joint appointment for Molecular Microbiology and Immunology at the Bloomberg School. He is adjunct affiliate professor at Georgetown University, Washington D.C.. In addition, he holds a joint appointment as Professor for Pharmacology and Toxicology at University of Konstanz, Germany; he also is Director of Centers for Alternatives to Animal Testing (CAAT) of both universities. He is Field Chief Editor of Frontiers in Artificial Intelligence, the former Head of the European Commission's Center for the Validation of Alternative Methods (ECVAM), Ispra, Italy, and has authored more than 685 scientific publications with more than 49,500 citations (h-index 117). His toxicology classes on COURSERA had more than 20,000 active learners.

Invited Experts

Peter Hotchkiss *(Speaker, Session 8)*

Peter Hotchkiss, PhD is the Science Policy Adviser within the Office of Strategy and Policy at the Organisation for the Prohibition of Chemical Weapons (OPCW). Here he serves as the science adviser to the Director-General and the Organisation, as well as the Secretary to the OPCW Scientific Advisory Board. In these roles he helps the OPCW monitor scientific and technological developments and the impact they may have on the Chemical Weapons Convention and the work of the Organisation.

Prior to his position at the OPCW, he was a Principal Member of Technical Staff at Sandia National Laboratories where he conducted research on energetic materials and supported international chemical security activities.

Joana Iljazi *(Moderator, Session 1)*

Joana Iljazi is the head engineer developing and running CBRN evaluations of large language models (LLMs) at Google DeepMind. She has expertise in building general and science AI models e.g. Biological Design Tools. She has a Master's in Machine Learning and before Google DeepMind she worked on building search and relevance models at Microsoft and Bloomberg LLP.

Khawaja Fahad Iqbal *(Speaker, Session 5)*

Dr Khawaja Fahad Iqbal is from Pakistan. He is an Assistant Professor and PhD Program Coordinator at the Department of Robotics and Artificial Intelligence at the National University of Sciences and Technology (NUST). He is also serving as the Co-Principal Investigator for the Intelligent Robotics Lab at the National Center of Artificial Intelligence (NCAI) Pakistan.

Dr Fahad has a keen interest in applications of AI in healthcare and is currently leading research projects on drug discovery using generative AI. He has authored over 25 research papers in well-reputed international journals and peer-reviewed conferences. Dr Fahad obtained his PhD degree in Robotics in 2022 and MS degree in Bioengineering and Robotics degrees in 2017 from Tohoku University, Japan. He received the Japanese Government MEXT scholarship for both his MS and PhD. He is the Treasurer of IEEE Robotics and Automation Society Pakistan and Finance Secretary for the MEXT Alumni Association of Pakistan.

Keunhong Jeong *(Speaker, Session 7)*

Dr Keunhong Jeong is a South Korean national and currently serves as a professor in the Department of Chemistry at the Korea Military Academy. With over 10 years of experience in quantum chemistry, artificial intelligence, and chemical safety, Dr Jeong has been a leading researcher in applying AI to predict the toxicity and chemical properties of hazardous substances. He has published over 100 papers in these fields, significantly advancing chemical safety through innovative quantum chemical calculations and AI-driven solutions. Dr Jeong also serves as an adviser on several national security and chemical safety initiatives, contributing his expertise to various government and international efforts. His work on predicting spectroscopy spectra (NMR, IR, Raman) for hazardous materials using AI and quantum chemistry has positioned him as a foremost expert in the field.

Chen Jiahao *(Speaker, Sessions 2 and 6b)*

Chen Jiahao 陳家豪 (他), PhD, is Director of AI and ML at New York City's Office of Technology and Innovation but is attending the conference in his personal capacity. The views expressed do not necessarily reflect the position of New York City or its Office of Technology and Innovation. He founded Responsible AI LLC, a boutique consultancy specialising in AI governance solutions, and Parity, an algorithmic auditing startup. He was also Executive Director of AI Research at JPMorgan Chase and Senior Manager of Data Science at Capital One, where he started and led R&D teams focusing on responsible AI deployment and compliance reviews for financial services. Previously, Jiahao was a Research Scientist at MIT CSAIL where he started the Julia Lab focusing on developing the Julia programming language. Jiahao remains active in academic machine learning research, including being Area Chair at FAccT and Ethics Chair of NeurIPS.

Miryang Kim *(Speaker, Session 4)*

Miryang Kim is a Senior Assistant Director at Korean Customs. As a technical officer, she specialises in big data and AI for customs administration. With over 16 years of experience in the information and communication technology field, she has expertise in utilising big data and leveraging data models to solve complex challenges within customs. Her experience includes managing a big data platform with AI models and leading data modelling projects. She trained as a data expert through the Korean Customs training programme and holds a master's degree in Applied Machine Intelligence from Northeastern University in the U.S..

Invited Experts

Michael Kuiper *(Speaker, Session 3)*

Michael Kuiper is an Australian senior research scientist and Team Leader of the Computational Modelling Group at CSIRO, Australia's national science agency. With over 20 years of experience in bio-molecular modelling and high-performance computing, he has contributed to advancing computational techniques for chemistry and life sciences. Recently, Michael has focused on integrating artificial intelligence into these fields, developing multi-agent systems powered by large language models (LLMs) for autonomous research. His work bridges traditional computational methods and emerging AI technologies in biochemical research.

Mohammed Lachkar *(Speaker, Session 9)*

Mohammed Lachkar, Moroccan nationality, is Professor of Chemistry at the Faculty of Sciences, Sidi Mohammed Ben Abdellah University (Fez, Morocco) and the Director of Engineering Laboratory of Organometallic, Molecular Materials, and Environment. From 2007 to 2012, he was the Head of the Chemistry Department at the Faculty of Sciences of Fez and the coordinator of the pole of research of medicinal and aromatic plants of the Sidi Mohamed Ben Abdellah University from 2015 to 2019. Mohammed Lachkar is an expert in the field of chemical safety and security. He has attended several training courses and workshops on chemical safety and security in Morocco and abroad. He has also taken part in a number of international meetings and conferences in the field of chemical safety and security. Professor Lachkar's publications include more than 200 peer-reviewed articles and 7 patents in his specialised areas.

Teodoro Laino *(Speaker, Sessions 1 and 6a)*

Dr Teodoro Laino, an Italian national, is a Distinguished Research Scientist and manager at IBM Research Europe - Zurich Laboratory. With a background in theoretical and computational chemistry, Dr Laino has expertise in developing machine learning and artificial intelligence solutions to innovate chemical and materials science. His work has been pivotal in creating IBM RXN for Chemistry, a platform leveraging AI to predict reactions and streamline synthetic routes. Dr Laino's research focuses on digitalising and automating complex chemical processes, emphasising the integration of multimodal data, from reaction predictions to spectroscopic analysis. His efforts advance the field by harnessing diverse data types to enhance chemical understanding and innovation. Recognised with the Sandmeyer Award by the Swiss Chemical Society in 2022, his team's work underscores their impact on digital chemistry. As a panel expert, Dr Laino brings valuable knowledge in AI applications, especially those relevant to advancing the Chemical Weapons Convention.

Doohee Lee

Doohee Lee, a South Korean national, is an Army Major and Head of the CBRN AI Research Department at the CBRN Defense Research Institute (CDRI), one of the OPCW-designated laboratories. He holds a PhD in Chemistry from the University of Texas at Austin and has extensive experience in chemical warfare agent detection and AI-based remediation through supramolecular chemistry. Lee has actively participated in key OPCW proficiency tests and international conferences, contributing to advancements in chemical and biological defence. His research focuses on AI applications in detecting chemical threats, making him a valuable expert in the field.

Zheng (Arthur) Li *(Speaker, Session 1)*

Mr Zheng (Arthur) Li is a Chinese born, Canadian trained scientific business leader with years of experience building cutting-edge companies at the intersection of AI and chemistry. He currently leads the global growth for Chemical AI Inc., an innovator in applying machine learning to chemical reaction informatics. Prior to this role, he was an early member for Cyclica Inc., a Canadian startup that uses AI and machine learning in drug design. He also worked for BlueDot Inc., a Canadian company that uses AI to survey biological and chemical risks. He holds an MBA and a Master of Science in Pharmaceutical Sciences from the University of Toronto.

He Liming *(Moderator, Session 6b)*

Associate Professor He Liming, from China, has been serving as the Assistant Dean of the Artificial Intelligence Research Institute at Shanghai Jiao Tong University (SJTU AI) since the establishment of the institute, responsible for scientific research management and external cooperation. Starting from 2022, he has been promoting the AI for Science (AI4S) layout within the SJTU AI, focusing on the project implementation of AI for Chemistry research direction. He has organised a team to develop the Baiyulan Scientific Chemistry Large Model, using artificial intelligence to accelerate compound research and development, innovative design of small molecules, functional prediction, chemical reaction prediction, etc. This endeavour aims to establish a new model supported by artificial intelligence for basic and frontier scientific research.

Invited Experts

Robert MacKnight *(Speaker, Session 9)*

Robert MacKnight, a United States national, is a 4th-year PhD student in the Chemical Engineering Department at Carnegie Mellon University. He obtained his Bachelor's degree in Chemical Engineering from Purdue University. Robert's research lies at the confluence of AI, machine learning (ML), and chemistry, with a particular focus on compiling large computational chemistry datasets for ML purposes, optimising experiments using ML algorithms, and employing large language models to create agents capable of conducting physical experiments and computational workflows. He has notable expertise in addressing the safety and dual-use capabilities of these advanced systems. Robert's work is particularly relevant to the Conference as it showcases the integration of cutting-edge AI and ML techniques in chemical research and emphasises the importance of safe and responsible development of these technologies.

Bramley Maetsa *(Speaker, Session 3)*

Bramley Maetsa is the IT Digital Innovation Enablement Lead at Sasol. He has 18 years of experience in IT, with a background in consulting, product development, digital transformation and IT service management across various geographies. Bramley has successfully implemented IT and digital operating models, digital toolchains, and new ways of working as part of digital transformation programmes.

Currently, he is leading the implementation of AI and generative AI strategies and policies for Sasol. His work includes use cases in AI-driven cybersecurity management, supply chain automation, employee safety, chemical search, customer experience enhancement, contract management, and the digital transformation operations.

Sasol is a global chemicals and energy company, leveraging its expertise to integrate advanced technologies and processes into world-scale operating facilities.

José L Medina-Franco *(Speaker, Session 1)*

Dr Medina-Franco is Mexican holding a BSc in Chemistry (1998, National Autonomous University of Mexico (UNAM)), a MSc and PhD degree (2005, both from the UNAM). In 2005, Dr Medina Franco joined the University of Arizona and he was named Assistant Member at the Torrey Pines Institute for Molecular Studies in Florida in August 2007. In 2013, he conducted research at the Mayo Clinic. In 2014 he joined UNAM and now is Full Time Research Professor. He leads the DIFACQUIM research group at UNAM. The research focus is on chemoinformatics, molecular modelling and artificial intelligence with applications on epigenetic targets and natural products.

Dr Medina-Franco is a member of the National Researcher System in Mexico with the highest level. In 2017 he was named Fellow of the Royal Society of Chemistry (UK). Dr Medina Franco has published 310 peer-reviewed papers, 25 book chapters and issued one international patent.

Hajar Mousannif *(Moderator, Session 2)*

Hajar Mousannif is a Full Professor at Cadi Ayyad University in Morocco and Lead Scientist at Katanemo, a tech startup in Washington, USA, focused on generative AI and large language models (LLMs). With over 19 years of experience in AI, machine learning, and data science, she has published over 90 research papers and holds many AI patents. Hajar founded a Master's programme in Artificial Intelligence at Cadi Ayyad University and has received awards such as the L'Oréal-UNESCO Award and the WomenTech Global AI Inclusion Award. She is also an active member of the TinyML Foundation and chairs the 2024 TinyML EMEA Innovation Forum. Hajar is recognised as a thought leader and speaker in AI and has a strong LinkedIn presence, promoting collaboration and advancements in AI worldwide.

Catharina Müller-Buschbaum *(Moderator, Session 5)*

Dr Catharina Müller-Buschbaum (of Germany) is currently acting as a Managing Director at Accenture. Her focus is on advancing the digitalisation of companies in the chemical and natural resources industry. In her work she supports clients in aligning the use of technology including AI with its business strategy, ensure data readiness, invest in scalable infrastructure, build skilled teams, consider ethical and regulatory aspects, manage change, mitigate risks, plan for scalability, integrate seamlessly, and focus on continuous improvement to maximise AI benefits and minimise challenges. Furthermore, Dr Müller-Buschbaum gained profound experience in the chemical industry with the global specialty chemicals company Evonik where she also serves as Managing Director of its Digital Subsidiary, Evonik Digital GmbH. She holds a doctorate in chemistry from the University of Cologne, Germany.

Daan Noort *(Speaker, Session 8)*

Daniel Noort studied chemistry at the University of Leiden. After obtaining his PhD in 1992, he started his professional career at The Netherlands Organization for Applied Scientific Research (TNO) in The Netherlands and worked for 30 years in the CBRN domain. He is author of more than 80 peer-reviewed scientific papers and book chapters. He has been active as a member of various international working groups and panels on CBRN defence, including those of NATO.

From June 1, 2022, Dr Noort is the Head of Laboratory at the Organisation for the Prohibition of Chemical Weapons (OPCW, The Hague, The Netherlands). He is responsible for all activities of the OPCW Laboratory, including the interactions with the network of Designated Laboratories and research activities taking place at the Centre for Chemistry and Technology. Before joining OPCW as employee, Dr Noort acted as a member of the Scientific Advisory Board of OPCW.

Invited Experts

Anass Nouri

Anass Nouri earned his PhD degree in Computer Science from Caen Normandy University (France) in 2016. Between 2015 and 2017, he served as an assistant professor in the Computer Science Department at the National School of Engineering of Caen (ENSICAEN). After a postdoctoral year at the INSERM of Nantes (France) in the 3D medical imaging field, he held the position of Associate Professor of Computer Science at the ISEN School of Engineering in Brest/France and Ibn Tofail University of Kénitra/ Morocco since 2018. He is affiliated to the GREYC laboratory in ENSICAEN and the SETIME laboratory (Ibn Tofail University, Morocco). Anass Nouri has been awarded two international patents and has contributed to over 35 papers at referred international conferences, journals and books in the field of machine learning and 3D imaging. He teaches courses between France and Morocco and serves as a consultant to several firms in Europe in the field of 3D imaging.

Altrine Obiero *(Speaker, Session 4)*

Altrine Obiero is a CBRN security expert working for the Government of Kenya, under the Ministry of Interior and National Administration. Her 16 years of experience in threat assessments, counterterrorism, geospatial systems, cybersecurity, air operations, policy formulation, capacity building, and diplomacy, contributes to her multidisciplinary skill-set essential for addressing the country's and region's unique security challenges and emerging threats.

Her expertise lies in bridging security, policy, and science to promote the responsible use of CBRN materials and prevent the proliferation of weapons and their delivery systems. In this event, Altrine underscores the importance of technology in enhancing threat detection, response capabilities, and implementing regulatory frameworks to prevent deployment of chemical weapons.

As a Centre for Non-Proliferation Studies scholar and CBRN technical expert, she contributes to international collaborations, by working with governments and organisations to strengthen CBRN defence capabilities and advance global non-proliferation efforts and security.

Johannes (Jim) Ottele *(Speaker, Session 8)*

Johannes (Jim) Ottele is a Dutch analytical chemist working as an inspector at the Organisation for the Prohibition of Chemical Weapons (OPCW). He obtained his PhD from the Stratingh Institute at the University of Groningen, where he conducted fundamental research of foldamers and self-replicators during his doctoral and postdoctoral studies. Before joining the OPCW, he worked as a technical consultant, managed the finances of a national research institute and founded his own company in science communication. Besides his work as an inspector, Jim is engaged in the evaluation of the uses and risks of artificial intelligence concerning the Chemical Weapons Convention.

Sara Peacock *(Moderator, Session 8)*

Ms Sara Peacock is a Senior Science and Technology Manager of the Joint Science & Technology Office under the Chemical and Biological Defense Program and the Defense Threat Reduction Agency (USA). She leads a portfolio aimed at characterising and reducing the hazards posed by chemical threat agents providing a robust fundamental knowledge base for countering current and future chemical and biological threats. The portfolio includes cross-cutting research in chemistry, reactivity, environmental fate, and toxicology. Additionally, Ms Peacock has worked with research teams to modernise the program, directing the utilisation and expansion of *in vitro* and *in silico* approaches for predictive characterisation including alternatives to laboratory testing such as various organ-on-a-chip technologies. Her formal education is in animal science and agriculture, receiving her degrees from West Virginia University. She is a recognised expert in advanced and emerging threats, engaging and supporting various combatant commands, interagency, and international partners.

Rohan Perera *(Speaker, Session 8)*

Rohan P. Perera graduated from the University of Colombo majoring in chemistry and received his PhD in Chemistry from Wichita State University, Kansas, USA, in 2004. His research centred on employing computer-aided molecular design and synthesis to elucidate the etiology of neurodegenerative diseases.

In 2014, Dr Perera joined as a Senior Programme Officer in the International Cooperation and Assistance Division at the OPCW, in The Hague, the Netherlands. While at the OPCW, he coordinated chemical safety and security management programmes and analytical skills development courses. He supported the training of over 2000 chemical safety and security professionals worldwide. In 2022, he joined as an affiliated subject matter expert in CBRN risk mitigation at U.S. CRDF Global. Currently, he serves as a special adviser for planning and coordinating international cooperation programmes at the OPCW. He has published more than 30 peer-reviewed research papers and written 4 books.

Invited Experts

Günter Povoden *(Moderator, Session 4)*

Colonel Günter Povoden has been working at the CBRN Defence Centre of the Austrian Armed Forces for more than 20 years. His current position is Head of Section Chemistry. In addition, he is a Senior Consultant for the European Union CBRN Risk Mitigation Centres of Excellence Initiative as the on-site expert on CBRN safety and security issues to strengthen CBRN capabilities of the Middle East Region partner countries at tactical, operational and strategic level. He is regularly supporting international organisations and institutions in specific counter-terrorism and CBRN related projects, trainings, exercises and missions. Since 2011, he has been an external lecturer raising awareness of chemical weapons and dual-use issues at the University of Technology in Graz, Austria. In 2019 he was appointed member of the Scientific Advisory Board (SAB) of the OPCW and elected Chair 2022-2024, monitoring and assessing emerging technologies and their impact on the Chemical Weapons Convention.

Edson Prestes e Silva Junior *(Speaker, Session 2)*

Edson Prestes is Full Professor at the Institute of Informatics of the Federal University of Rio Grande do Sul, Brazil. Throughout his career, Edson has worked on several initiatives related to standardisation, robotics, AI and ethics of AI in academia, industry, international and multilateral organisations. For instance, Edson is Senior Member of the IEEE Robotics and Automation Society (IEEE RAS) and IEEE Standards Association (IEEE SA); Member of the Global Future Council on the Future of Artificial Intelligence at World Economic Forum; Member of the Global Commission on Responsible Artificial Intelligence in the Military Domain; Chair of the IEEE RAS/SA 7007 - Ontologies for Ethically Driven Robotics and Automation Working Group; Former Member of the United Nations Secretary-General's High-level Panel on Digital Cooperation; and Former Member of the UNESCO Ad Hoc Expert Group (AHEG) for the Recommendation on the Ethics of Artificial Intelligence.

Kamesh Reddi *(Speaker, Session 1)*

Dr Kamesh Reddi received his PhD in Chemical Engineering, specialising in Artificial Intelligence and Process Control, from the Academy of Scientific and Innovative Research (AcSIR), India, in 2019. He began his career as a Scientist at CSIR-Indian Institute of Chemical Technology (IICT), Hyderabad, India, in 2016, and currently serves as a Senior Scientist in the same organisation. Dr Reddi has extensive research experience in AI and data science focusing on data-driven discovery, predictive modelling, multifunctional materials, process modelling, design, intensification, and scale-up. His current research focuses on AI/machine learning (ML) applications in chemistry/chemical industry for accelerated prediction, detection/classification, and discovery of novel chemicals/materials, and processes. He is particularly involved in developing AI-ML frameworks for predictive modelling and accelerated and integrated design of materials/catalysts-processes for sustainable technology development. Dr Reddi was a recipient of the Ambuja Young Researchers Award in 2014 from IIChE. He has authored 60 publications and conference papers.

Luke Rogers *(Speaker, Sessions 3 and 6a)*

Dr Rogers currently holds the position of Vice President of Innovation at On Demand Pharmaceuticals. There he leads a multi-disciplinary team of researchers working at the forefront of automated chemical manufacturing. Their work leverages artificial intelligence to rapidly develop, optimise, and scale continuous manufacturing processes to produce active pharmaceutical ingredients. Dr Rogers received his degree in medicinal chemistry from Trinity College Dublin, in his home country of Ireland. He also completed his PhD research in Trinity College on the synthesis and biomedical applications of tetrapyrroles.

Neeraj Sabhnani *(Speaker, Session 3)*

Neeraj Sabhnani is an Indian national and is currently working as the Head of Analytics at Coromandel International. He brings over 24 years of experience in AI, machine learning, data science, and business analytics. He has led data-driven organisations and implemented analytics solutions across functions like sales, marketing, finance, production, and supply chain in global multinational companies. Earlier, Neeraj held senior analytics leaderships roles at Verizon, ServiceNow, HP, Microsoft, Honeywell, and GE Capital.

Neeraj excels in leveraging AI to drive strategic decision-making, optimise processes, and support large-scale transformation initiatives. His expertise makes him adept at discussing the role of AI in the chemical industry and how AI can help in enhancing the implementation of global frameworks like the CWC.

He holds a B.Tech from IIT-Delhi, and advanced degrees in management and data sciences from institutes like IIT-Mumbai, BITS-Pilani and Indian School of Business. Neeraj is also a recognised speaker on AI and ML.

Rajaa Seghiri

Rajaa Seghiri is a professor habilitated to direct research, specialising in Process Engineering at the Ecole Nationale Supérieure de Chimie, Ibn Tofail University (Morocco). A diverse career path and an insatiable curiosity have allowed her to acquire and apply a wide range of technical, managerial, and sociocultural abilities. Since November 2023, she has served on the University Council. She is also a member of the School Council. She is the Chair of the ENSC Research Committee. Between 2009 and 2015, she worked as Head of Employee Training (ADRIA Développement, France), Production Engineer (Fleury Michon, France) and QSE Engineer (Ventana Aerospace, France). She has 13 books and international scientific publications to her credit. Her research focuses on clean processes, lean manufacturing and the environment. She is the coordinator of ENSC's integrated preparatory cycle. She also oversees numerous financed research agreements and serves as a reviewer for international scientific journals

Invited Experts

Axel Soto *(Speaker, Session 9)*

Dr Axel Soto is a researcher at CONICET (Argentina), a professor at Universidad Nacional del Sur (Argentina), and an adjunct professor at Dalhousie University (Canada). He worked as a research associate at The University of Manchester and the National Centre for Text Mining (UK). Prior to this, he was a research associate at Dalhousie University. His PhD, awarded in 2010, centred on AI-based physicochemical property prediction. Most of his research focuses on artificial intelligence with applications in cheminformatics and natural language processing. He has also worked on consulting projects with companies and organisations such as The Boeing Company, the Inter-American Development Bank, and EY. He is an associate editor of the journal Computational Intelligence. He has received prestigious distinctions for his work from the Association for Computing Machinery (ACM) and from Google as part of its "Research Awards for Latin America" programme.

Bousalham Srhir

Bousalham Srhir is the Deputy Director and an Associate Professor at the National Graduate School of Chemistry, Ibn Tofail University, Morocco. He has a PhD in Analytical Chemistry and is the author of several scientific publications. He is also the coordinator of partnership agreements with the chemical industry. Dr Srhir was a member of the 24th edition of the OPCW Associate Programme in 2023.

Molly Strausbaugh *(Speaker, Session 1)*

Ms Molly Strausbaugh is a US citizen and Director at CAS. CAS is a division of the American Chemical Society, a global organisation that has supported the advancement of science and technology since 1907. Ms Strausbaugh leads a team of scientists, engineers, and project managers responsible for discovering, organising, and enhancing regulatory, health, safety, and commercial activity information for inclusion in CAS's comprehensive corpus of chemical substance information. Her work is directly related to the application of artificial intelligence and machine learning in chemistry, as the foundation of all AI/ML approaches is authoritative, standardised, and structured content for model training. Ms Strausbaugh has presented at global scientific conferences on the need for such curated information; recently devised, developed, and implemented a chemical supply chain mapping methodology only feasible because of structured scientific content; and assisted in the development of AI/ML algorithms for classification of patent literature.

Khalid R. Temsamani

Khalid R. Temsamani is a Professor of Analytical Chemistry at the University Abdelmalek Essaâdi, Morocco since 1989. He received his PhD in Chemistry from the Free University of Brussels (Belgium) in 1988. In June 2005, he was appointed by the Moroccan Minister of Higher Education and Scientific Research as National Coordinator in Materials Science and Representative of Morocco to the US NSF. Professor Temsamani is an International Expert with several international organisations in the fields of climate change, chemical security, and biological risk management. Back in 2011 he was one the reviewers on behalf of the National Research Council of the US National Academies of the document entitled "Chemical Laboratory Safety and Security". Khalid Temsamani is the Founding President of the Moroccan Biosafety Association (MOBSA) since October 2009. From February 2023 to July 2024, he was appointed as Director of the Pole of francophone science at the International Academy for Francophone Science in Rabat.

Elena Vodopolova *(Speaker, Session 7)*

Elena has 20 years of extensive experience in non-proliferation, disarmament and arms control. She participated in the negotiations on a new START that ended up with a signing of the Treaty on April 8, 2010. From 2010 to 2015, Elena also served as a member of the UNSC Panel of Experts on Iran, established to assist the UNSC Committee 1737 in its work. It was an independent expert body charged with processing independent, balanced, fact-based analysis of information, drafting recommendations, and consulting with Member States and the private sector. Elena also has a long history of dealing with a wide range of export control issues. The role of artificial intelligence in the chemical sciences as well as in the area of securing effective control over the transfers of sensitive items from a proliferation point of view is growing and is an issue of particular interest for the respective governmental authorities.

Scott Watson *(Speaker, Session 4)*

Scott Watson is a Criminal Intelligence Analyst currently working for the Chemical and Explosive Terrorism Prevention Unit of the Counter Terrorism Directorate at INTERPOL. Prior to joining INTERPOL in May 2023, Scott spent 8 years working as an Intelligence Analyst for law enforcement agencies in Canada. Is his current role, Scott analyses global chemical and explosive terrorist events and provides intelligence to INTERPOL member countries about emerging trends and terrorist threats related to chemical and explosive terrorism. Scott conducts research and analysis on potential terrorist use of new technologies such as artificial intelligence and how such technologies can be used by terrorists for chemical and explosive terrorist attacks. His work is used to inform INTERPOL member countries on how these technologies can be used not only by terrorists but also by law enforcement to counter emerging threats.

Invited Experts

Tongning Wu *(Speaker, Session 9)*

Tongning Wu received his BA in Biomedical Engineering (2002) from Tianjin University, MS degree in Communication and Information Systems (2005) from the China Academy of Telecommunication Technology, and PhD degree in électronique, traitement du signal (2009) from Université Paris-Est.

His research covers a wide range of topics in application of artificial intelligence in biomedical image analysis and electromagnetic simulation. He has authored more than 100 papers, 3 books and 30 patents. He serves as the Vice Chair of ITU-D Study Group 2 on Digital Transformation, and is a member of the Board of Directors of the Bioelectromagnetics Society. In addition, he is the Director Designate of Bioelectromagnetics Committee of Chinese Society of Biomedical Engineering.

Dr Wu is a Fellow of the Institution of Engineering and Technology (IET), and Senior Member of the Institute of Electrical and Electronics Engineers (IEEE).

William J Zamora *(Speaker, Session 5)*

Dr Zamora is a Costa Rican scientist who holds a Full Professor position at the University of Costa Rica. He is the group leader of CBio3 Laboratory at the School of Chemistry and Laboratory of Computational Toxicology and Artificial Intelligence (LaToxCIA-LEBi). His primary research focuses on cheminformatics, computational biology and chemistry, and artificial intelligence applications in life sciences. He has extensive experience in the characterisation of physicochemical properties - particularly lipophilicity - of pollutants, drug-like molecules, and biomolecules applying experimental and *in silico* techniques. In line with his interest in applying artificial intelligence algorithms to chemistry and adhering to the principles of Findable, Accessible, Interoperable, and Reusable (FAIR) data to enhance data management and sharing, his research groups have developed machine learning models for assessing the risk of chemical substances. These substances could potentially be classified as chemical weapons under the general purpose criterion of the Chemical Weapons Convention.

Shannon Zanatta *(Speaker, Session 7)*

Shannon Zanatta is an Australian Scientist working for the Department of Defence's Defence Science and Technology Group (DSTG) Australia. He holds a Bachelor of Science degree from La Trobe University and a PhD from the University of Melbourne both in organic chemistry. Since 2009 Shannon has worked in the chemical defence arena where his main interests and efforts have focused on understanding issues associated with the non-proliferation of chemical hazards. More recently as the Discipline Leader for Chemical Synthesis (2018) Shannon and his team have worked to better comprehend how emerging and novel technologies such as AI and large language models could lower traditional barriers required to access materials and expertise that could be employed to commit acts of chemical terrorism.