XVIII International Clay Conference

Trinity College, Dublin
13-18 July 2025

REPORT

INTRODUCTION

In 2020/2021, during the Covid pandemic, the Mineralogical Society and the Clay Minerals Group discussed the possibility of making a bid to AIPEA (Association Internationale pour l'Étude des Argiles) to host the prestigious International Clay Conference in the UK/Ireland. A little earlier, we had also decided to prepare a bid to host the European Mineralogical Conference 2024. Using the same venue and programme structure meant that we would be able to reduce the overall logistical burden and, at the same time, welcome two different international communities to our shores. Trinity College Dublin became quickly became a strong favourite as the venue. It has ideal conference facilities in the Arts Building of its City Centre Campus: seven lecture theatres in close proximity with capacities ranging from 100-450. All are equipped with the technology to allow for a modern hybrid conference. The events team in TCD is well equipped, flexible, professional and experienced, the perfect combination for a Society-run event which does not involve a so-called PCO (or professional conference organizer).

The Clay Minerals Society kindly agreed not to run its own Annual Meeting in 2025 and to incorporate its prize-winner lectures as plenary lectures in our programme. This helped to ensure a consolidation of the clay audience into one conference and was a significant gesture on the part of The CMS.

TCD's location in the centre of historic Dublin made for a lively and exciting location. Our international visitors were able to visit many of the local attractions, including the Guinness Brewery tour, the Book of Kells (about which more, later) etc. Dublin, like many cities, has suffered from significant inflation, affecting the prices of many of the services needed to run a conference. Delegates will certainly have noticed the high prices for hotel accommodation and restaurants.

STATISTICS

The conference managed to attract an audience of 660 people, of whom 530 attended in person and a further 130 attended remotely. These overall figures are in line with pre-pandemic levels. Predicting delegate numbers in the last 5-7 years has become difficult given the parlous stage of some economies, the geopolitical situation and the reduction in science funding in some countries. Delegates were present from 56 countries. Remote attendance certainly helped here.

We had an excellent crop of session leaders/organizers/chairs. No conference would ever function without these people who deal with all of the minutiae which mean that sessions run (mostly) smoothly. This list equates to our scientific committee:

Thierry Allard
Slávka Andrejkovičová
Fernanda Andreola
Deeba Ansara
Pilar Aranda
Bruno Azevedo
Matej Balaz
Ingrid David Barcelos
Blanca Bauluz
Lala Setti Belaroui
Susan Bernal
David Bish
Shashank Bishnoi
Janice Bishop
Bhabananda Biswas
Tom Blanton
Heloisa Bordallo
Fernando Borsatto
Ian C Bourg
Anthony Boxleiter
Jocelyne Brendle
Josef Breu
Adrian Broz
Kristina Butler
Alisson Ronieri Cadore
Marcelo Javier Sanchez Castilla
Giuseppe Cavallaro
Michael Cheshire
George E Christidis
George Chryssikos
Francis Claret
Francis Clegg
Sonia Conte
Pauline Corentin
Rainer Dähn
Francisco de Juan
Gustave Kenne Dedzo
Youjun Deng
Arek Derkowski
Jan Dietel
Daniel Dodoo
Reiner Dohrmann
Gerardo Dominguez
Rona Donahoe
Hailiang Dong
Roger Doome
Anja Dosen
Liva Dzene
Meriam El Ouahabi
Noémie Elleboudt
Crawford Elliott
Katja Emmerich
Valentina Erastova
Gonzalo R. Quezada Escalona
Nathalie Fagel
Qian Fang
Eric Ferrage
Marco Ferrari
Ambra Maria Fiore
Saverio Fiore
Jon-Otto Fossum
Jon Otto Fossum
Maria Victoria Villar Galicia
Urmi Ghosh
Raphaela de Oliveira Gonçalves
Daniel Santamaria Gonzales
Thomas L Gout
Georg Grathoff
Nia Gray-Wannell
Chris Greenwell
Georg Guggenberger
Hongping He
Theresa Hennig
Jonathan Suazo Hernandez
Miroslav Honty
Yandi Hu
Fabien Hubert
Yusuke Ide
Fakher Jamoussi
Stanislav Jelavic
Cliff Johnston
Andrey G Kalinichev
Heather Kaminsky
Nadine Kanik
Stephan Kaufhold
Hossein Kazemian
Xinyuan Ke
Simon Kemp
Toshihiro Kogure
Artur Kuligiewicz
Alfin Kurniawan
Elisa Laita
Bruno Lanson
Giuseppe Lazzara
Katharina Lenhardt
Olivier Leupin
Martin Li
Mingxian Liu
Xiandong Liu
Rafael Ferreiro Mählmann
Prakash Malla
Alastair Marsh
Jakub Matusik
Owen McCaffrey
Dougal McCarty
Robert Mikutta
Nobuyoshi Miyamoto
Mohamed Mouafon
Raj Mukhopadhyay
Ines Mulder
Thomas Munier
Telma Musso
Anke Neumann
Alex Newns
Mika Niskanen
Simon Norris
Makoto Ogawa
Erwan Paineau
D.K. Pal
Aditi Pandey
Pooria Pasbakhsh
Ranjan Paul
Pierre Pellenard
Helen Pendlowski
Ingeborg Pensis
Jeanne Percival
Murielle Perronnet
Sabine Petit
Rossella Petti
Jon Phipps
Pierre Picot
Michael Plötze

Manuel Pozo
Bénédicte Prelot
Vanessa Prévot
Andy Price
Milan Pšenička
Francesco Putzolu
Serena Riela
Javier Garcia Rivas
Valentin Robin
Pete Ryan
Karolina Rybka
Binoy Sarkar
Tsutomu Sato
Thorsten Schaefer
Matthias Schellhorn
David Schofield
David Schofiled
Paul Schroeder
Karen Scrivener
Branimir Segvic
Patrik Sellin
Aasim Shaffi
Kirill Shafran
Balwant Singh
Eirini Siranidi
Sarah V Stewart
Joseph W Stucki
Brad Sutter
Daniel Svensson
Marek Szczerba
Bharat Venkata Tadikonda
Yuanzhi Tang
Qi Tao
Emmanuel Tertre
Antoine Thill
Ilda Tole
Kristian Ufer
Andrew Vietti
Maria Victoria Villar
Cesar Viseras
Claudia Vitone
Hao Wang
Hailong Wang
Laurence N Warr
Yanfu Wei
Mike Whittaker
Dave Wray
Himanshu Yadav
Huaming Yang
Menghan Yu
Peng Yuan
Yafei Zhao
Chun Hui Zhou
Guanzheng Zhuang

We also drew heavily on the advice and experience of those in the Scientific steering committee

- Helen Pendlowski
- Anke Neumann
- Sabine Petit
- Yuji Arai
- Peng Yuan
- Ian Bourg
- Pete Ryan
- Bruno Lanson

and on the AIPEA – ICC Advisory Committee

- Chun Hui Zhou (AIPEA, Vice President)
- Bruno Lanson (AIPEA, President)
- Peter Ryan (AIPEA, General Secretary)
- Jeanne Percival (AIPEA, Chair Teaching Committee)
- Alberto López Galindo (AIPEA, Treasurer and organizer of the ICC 2017 in Spain)
- Saverio Fiore (AIPEA, organizer of the ICC 2009 in Italy)

We were fortunate in securing the help and support of a team of volunteers who worked tirelessly throughout the conference to make sure that the sessions ran smoothly, that remote speakers were primed and ready to participate, and that interactions between those present in person and remotely ran as smoothly as possible. These are: Faisal Gread, Celia Martín Morales, Alessandro Lo Bianco, Ludovico Guercio, Giulia D'Agostino, Ana Beatriz Zabala, Fabiane Santana, Trung Nguyen, Aurelie Dumont, Andrea Pierozzi, Helen Pendlowski, Kyle Adams, Daniel Dodoo, Eleanor Olegario, Ciara Ní Mhaoldomhnaigh, Nikita Turton, Devyani Jambhule.

ICC Volunteers enjoying a well-earned dinner

PROGRAMME

The conference hosted 35 sessions, with up to seven sessions running in parallel at any given time. We decided to retain shorter sessions as stand-alone, rather than force uncomfortable merges, so that we would be able to have focused and dedicated session leaders even for sessions with just 6-8 talks.

- Universal
- The Role of Layered Minerals in the Origin of Life – Insights from Terrestrial and Extraterrestrial Environments
- From Dioctahedral to Trioctahedral Smectites: Where Volcanism meets Weathering, Sedimentation and Diagenesis
- Teaching, History, and Future of Clay Mineralogy (in honor of Dewey Moore and Bruce Velde)
- Origin and Age of Clay Minerals in Soil and Sediment

- Soil and Clay Chemical Analysis – Symposium Honoring M.L. Jackson (Short title: Jackson Symposium)
- Critical Minerals in Clay-rich Deposits: Processes, Occurrences, and Resource Potential
- Natural Zeolites: From Geology and Fundamental Science to Applications and Market Challenges
- Identification and Characterization of Phyllosilicates on Mars through Remote Sensing, Rover Instruments, and Analog Studies
- Advances in structural characterization of layered compounds
- Clay Applications in Ceramics
- Materials via Ordered Interstratifications
- Industrial Applications of Clays
- Clay Minerals in Diagenetic and Low-Grade Studies: Implications for Resource Exploration and Sustainable Energy Development
- Smectite Layer Charge and Interlayer Environment: Structure, Alteration, and Environmental and Technological Significance
- Science and Engineering of Clays for Nuclear Waste Disposal
- Impact of temperature on bentonite barrier systems based on findings from in situ experiments in the context of radioactive waste disposal
- Clay Mineral-Based Catalysts for Environmental Engineering and Chemical Processes
- Greenhouse Gas Remediation
- Fundamentals of Tubular Nanoclays
- 1D Nanoporous Clay Materials and Their Industrial Applications
- Multiscale Computational Modeling of Clay-related Materials and their Fluid Interfaces
- Nanoelectronic and Nanophotonic Applications
- Properties and Applications of Novel Smart Clay, LDH and Clay-related Nanomaterials
- Clays in Geotechnics – Problems and Applications
- Advances in Calcined Clays as Supplementary Cementitious Materials in Blended Cements
- Sustainable and eco-friendly clay-based materials
- Mechanical and Mechano-chemical Activation of Clays
- Synthesis of geo-inspired clay minerals and associated hybrids
- The Role of Clays in Human Health and Biomedical Sciences
- Clay Materials in Healthcare Technologies
- Chemical reactions with clay minerals: implication for environmental challenges and remediation strategies
- Role of Minerals and Mineral weathering in Carbon Sequestration and Other Ecosystem Services of Soils
- Clays in Mining
- Synthesis and Applications of Modified Clays in Environmental Remediation
- Interactions of Iron-rich Clays and Iron Oxides with Organics and Heavy Metals: Implications for Iron/Carbon/Metal Cycling

This programme reflects the changes in scientific focus from conferences which ran in the past.

WORKSHOPS

We were very fortunate to secure four excellent workshops at our conference.

ICDD® PDF-5+ and JADE® Pro Workshop (sponsored by the International Center for Diffraction Data)

With an emphasis on clays and minerals, the first half of the workshop presented the Powder Diffraction File™ (PDF®) databases. The second covered qualitative and quantitative XRD analyses using JADE Pro software and clay modelling using the JADE Pro Toolkit features.

Key Topics

- Powder Diffraction File database entries
- Clay and mineral raw data entries
- Data mining
- Qualitative and quantitative phase analysis
- Oriented clay diffraction pattern simulations

The workshop was presented by Tom Blanton and Anja Dosen. A video recording of the programme is available here.

Tom Blanton discovered that the International Center for Diffraction Data (ICDD) was mentioned in the Book of Kells, created in around 800AD!

Kaolin, Kaolin and Kaolin – Everywhere

Leaders: Dr Prakash B. Malla and Dr Jeanne Percival
Kaolin is a widely and the most used industrial clay mineral and is an integral part of everyday life due to its ubiquitous use in many commercial products. These uses include, but are not limited to, paper and paperboard, paint, plastics, ceramics, filter, fiberglass, rubber, ink, adhesives, high strength cement/concrete, geopolymers, catalysts and pharmaceuticals. Kaolin also plays vital roles in many geochemical processes and environments, including soils. It is an important source of rare earth elements, which are critical for everyday high technology, renewable energy, climate change, defense and national security. The following topics will be covered:

1. Course Introduction
Prakash Malla, President, Quantum Industrial Minerals, USA

2. Genesis and Alteration Mineralogy
Michel Cheshire, Research Scientist, Chevron Corporation, USA
David Bish, Professor Emeritus, Earth and Atmospheric Sciences, Indiana University, USA

3. Structure and Surface Chemistry
Cliff Johnston, Professor of Soil Chemistry, Purdue University, USA

4. Distinguishing the Kaolinite Group Minerals in the Lab and the Field
Jeanne Percival, Emeritus Scientist, Mineralogy Section, Northern Canada Division Geological Survey of Canada, Natural Resources Canada, Government of Canada
Prakash Malla., President, Quantum Industrial Minerals, USA

5. Adsorption, Retention, and Removal of Metals and Organics and Kaolin in Soils
Balwant Singh, Professor of Soil Chemistry, University of Sydney, AUSTRALIA

6. Exploration, Mining, and Beneficiation (Processing)
Prakash Malla, Thiele Kaolin Company, USA (Retired)

7. Kaolin Uses and Applications
Prakash Malla, President, Quantum Industrial Minerals, USA
Qingxu Jin, Asst. Professor of Civil and Environmental Engineering, Michigan State University, USA
Murielle Perronnet, Ceramics – Science & Technology Director, Performance Minerals, Imerys, FRANCE

8. Valorizing Kaolin Waste Streams
Alex Newns, Minerals Technology Manager, Imerys, UK

9. Halloysite Deposits, Properties and Applications
Serena Riela, Professor of Organic Chemistry, University of Catania, ITALY

10. Kaolin Modeling and Simulation
Gonzalo R. Quezada Escalona, Academic Assistant, Faculty of Engineering, University of Bio-Bio, CHILE

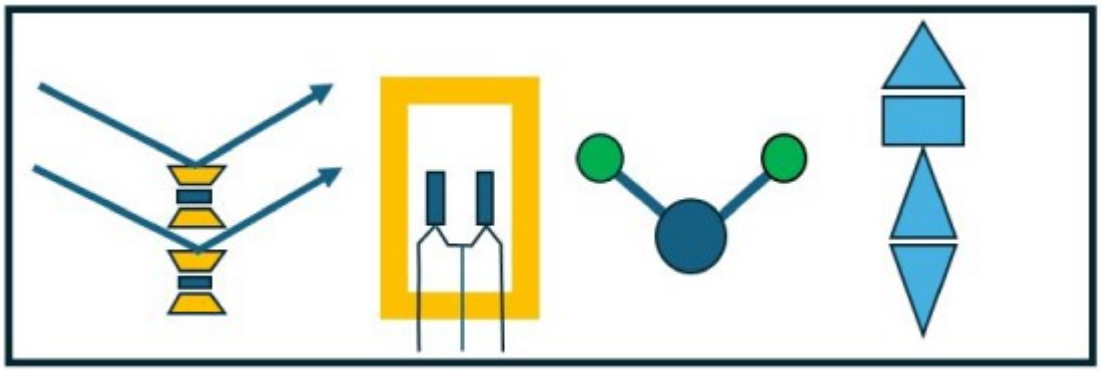
11. Rare-Earth Elements in Kaolin
Crawford Elliott, Associate Professor of Geosciences and Chemistry, Georgia State University, USA
Prakash B. Malla, President, Quantum Industrial Minerals, USA

12. Kaolin in Nanotechnology – Preparation, Properties and Applications
Jakub Matusik, Professor, AGH University of Science and Technology, POLAND
Gustave Kenne Dedzo, Department of Inorganic Chemistry, University of Yaoundé I, CAMEROON

This workshop was originally scheduled to take place during the XVII ICC in Istanbul. We are grateful to all of the presenters for agreeing to run it in Dublin instead.

Video recording to follow. A copy of the handbook which accompanied the workshop is available here.

Key Determinative Methods in Clay Science



Without doubt, X-ray diffraction, thermal methods, infrared spectroscopy and electron microscopy can be considered as the key methods that are employed universally across research and industrial analysis of clays and clay materials. Additionally, in clay science, a multi-method approach is often the only way to advance many research questions. This workshop is designed to provide delegates with a foundational introduction to four key methods, each introduced by an expert in the field. No prior knowledge is assumed, and the workshop will strive to provide a solid foundation in the applications of each of these methods, covering the do's and the don'ts, and the strengths and weaknesses of each, including ample opportunity for delegates to ask questions and benefit from the advice of the experts.

X-ray diffraction and the identification and structure determination of clay minerals: An updated perspective

Bruno Lanson, ISTerre, CNRS, Univ. Grenoble Alpes, France

The finely divided and bidimensional character of clay minerals, and other lamellar compounds, has led to the development of specific approaches for their identification and the determination of their crystal structures using X-ray diffraction. This lecture will review the basic concepts of this identification, including practical aspects of sample preparation and data collection. It will also introduce basic concepts of X-ray diffraction profile modelling as a key tool allowing the description of lamellar structures, including disruptions of periodicity such as interstratification and stacking faults.

Electron microscopy for clay science: what can be done and what to be considered

Toshihiro Kogure, Department of Earth & Planetary Science, School of Science, The University of Tokyo, Japan

Electron microscopy, with resolutions ranging from the micron to angstrom levels, is a unique and essential tool for investigating the morphology, structure, and composition of typically fine and heterogeneous clay particles. As is well known, electron microscopes are broadly classified into SEM and TEM/STEM, with the choice depending on the sample form (bulk or thin film) to be observed. The resolution of SEM for surface observation is approximately 1 nm, and selecting the appropriate accelerating voltage is crucial when examining clay minerals. TEM/STEM can provide atomic-scale structural information about clay minerals through electron diffraction and so-called high-resolution TEM (HRTEM); however, electron radiation damage must be carefully managed. This lecture will introduce various observation and analysis examples and highlight key considerations for beginners using electron microscopy in clay science.

Thermal Analysis in Clay Science

Katja Emmerich, Faculty of Civil Engineering, Geo- and Environmental Sciences
Karlsruhe Institute of Technology, Germany

Thermal analysis was one of the first analytical methods used to characterize clay minerals and has developed ever since. Clay minerals and associated minerals and phases in soils and rocks undergo various thermal reactions (e.g. dehydration, dehydroxylation, oxidation, decomposition, recrystallisation, phase transition). Their characteristics provide information on the amount of a mineral, its size and structure even if it is turbostratic disordered like swellable clay minerals. Sensitivity is enhanced by coupled analysis of evolved gases. The lecture will provide a basic introduction to thermal analysis and thermal reactions of clay components.

Infrared spectroscopic techniques for the non-invasive study of clays

Georgios Chryssikos, Institute of Theoretical & Physical Chemistry, National Hellenic Research Foundation, Greece

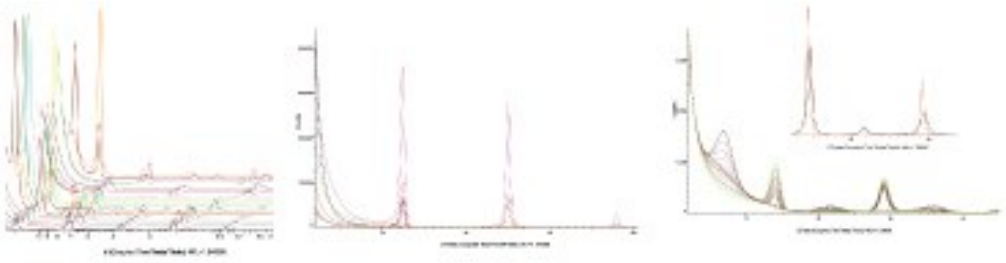
This lecture will introduce the application of attenuated total reflectance (ATR) in the mid-infrared and diffuse reflectance in the near infrared (NIR) for the study of clay minerals with

minimum or no sample preparation. The aim is to isolate and study the spectrum of the water and hydroxyl species that decorate the internal and external surfaces of clays. Beyond mineral identification, these spectra provide intrinsic proxies for the octahedral sheet, the termination of the tetrahedral sheet, the layer charge, the contents of the interlayer etc. Tips for the proper measurement of samples in the range from mg to tons as well as efficient techniques for band separation (including practical methods for H/D exchange) will be presented.

Video recordings to follow.

1D X-ray diffraction pattern modelling

An introduction 1to 1D modelling of the XRD patterns of clay minerals



Precise clay mineral identification requires detailed examination of XRD patterns that are intentionally biased towards their diagnostic 00*l* reflections and often recorded following a sequence of ancillary treatments, such as exposure to ethylene glycol or heating. Modelling of these so called '1D' XRD patterns has and will continue to play a very important role in the analysis process.

This workshop introduced two different software programmes that can be used to calculate 1D patterns from clay minerals, namely *Sybilla* and *Profex-BGMN*. Basic and important aspects of the theory of the calculations will be covered, but emphasis will be placed on the practical application of these softwares to calculate 1D patterns of pure and mixed-layer clay minerals for comparison with real examples.

The workshop was led and taught by Marek Szczerba, Kristian Ufer, Jan Dietel and Artur Kuligiewicz.

1. Welcome and overview lecture on 1D modeling (Presentation of both programs; Aim of the workshop (similarities, differences, advantages and disadvantages of each program)
Kristian Ufer & Marek Szczerba

2. Installation of Sybilla and BGMN/Profex, distribution of example files/packages/structures
Kristian Ufer, *Marek Szczerba*, *Artur Kuligiewicz* & *Jan Dietel*

3. Lecture about R0-R1 model – diffractograms of end-members: kaolinite, illite, smectite, chlorite
Marek Szczerba

4. Lecture and demonstration about modelling ordered clay minerals in BGMN/Profex
Kristian Ufer

5. Lecture about modelling illite-smectite in BGMN/Profex
Kristian Ufer & Jan Dietel

6. Exercise illite-smectite (BGMN/Profex)
Kristian Ufer & Jan Dietel

7. Lecture and exercise about water and ethylene glycol in illite-smectite (1EG/2EG; BGMN/Profex)
Marek Szczerba, Kristian Ufer, Jan Dietel

8. Lecture and exercise about hydroxy-interlayered smectite and illite-smectite (HIS, I-HIS)
Jan Dietel

9. Lecture about Sybilla: theoretical introduction
Marek Szczerba

10. Lecture about Sybilla: practical introduction
Artur Kuligiewicz

11. Exercise Sybilla 1: kaolinite, chlorite and smectite
Marek Szczerba & Artur Kuligiewicz

12. Second Lecture about Sybilla: probability parameters and Sybilla Server
Artur Kuligiewicz

13. Exercise Sybilla 2: kaolinite+chlorite, illite-smectite, other interstratifications
Marek Szczerba & Artur Kuligiewicz

Video recordings to follow.

FIELDTRIPS

The conferences hosted two field trips: one to the Giant's Causeway, Co. Antrim, N. Ireland to see the famous columnar basalts, and another to visit the Platin Cement factory in Co. Louth.

Giant's Causeway

This trip explored North Ireland's iconic Causeway Coast. It visited two County Antrim sites that played an important part in shaping the science of geology and continue to inform our understanding of North Atlantic opening during the Paleogene. At Portrush, from the viewing area of the NIEA Coastal Zone visitor centre, the regional geology was introduced. Rocks of the Portrush Sill and surrounding country rocks were then be examined to see if the Neptunists or Plutonists were right. After lunch, the groups travelled to the Giant's Causeway UNESCO World Heritage Site. Here they examined the famous columnar basalts and a thick weathered, lateritized interval that marks the boundary between formations of the Antrim Lava Group.

The trip attracted two busloads of our delegates (!) and was organized and led by Mark Cooper (of the British Geological Survey, Northern Ireland), Mike Simms (Ulster Museum, who was forced to pull out of the tour at the last minute because of ill health) and David Chew (Trinity College Dublin)

ICC Delegates at the Giant's Causeway (Jeanne Percival sitting in the 'Wishing Chair')

Platin Cement factory and Trim Castle

Cement Manufacturers Ireland invited our delegates to visit one of Europe's most modern cement factories. This is located near Drogheda, Co. Louth, about an hour's drive north of Dublin.

The factory is located here because of ready access to a supply of high-quality limestone, the proximity of a port at Drogheda and the accessibility to a ready-made market in Dublin. Visitors will be shown around the plant which will was operating at 100% capacity. 50% of all of the fuels used to heat the kilns is produced from Solid Recovered Fuels. The factory has an annual production capacity of 2.8 million tonnes of cement.

The control room includes an online laboratory continuously monitoring the raw material inputs and the resulting cement using a variety of analytical methods including online XRF and XRD which was popular with delegates.

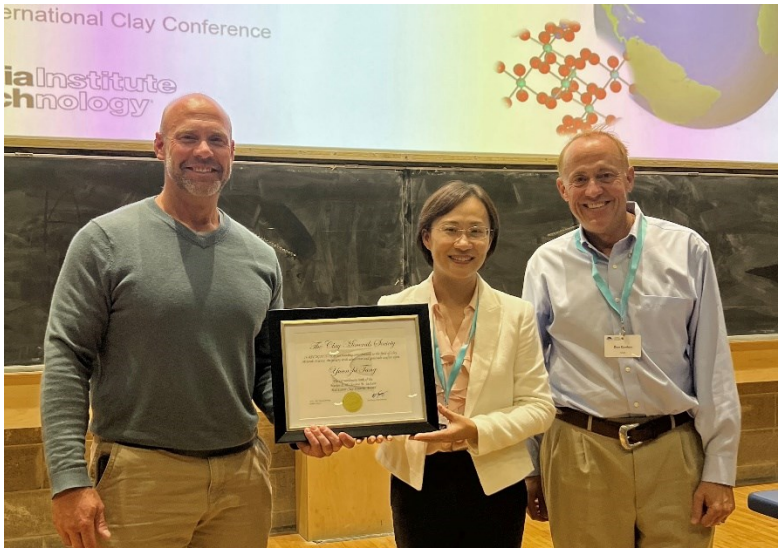
After the factory visit, delegates then went to the nearby Trim Castle.

located in the town of Trim in County Meath, is the largest Norman castle in Ireland, covering an area of 30,000m2. It is splendidly preserved, and is beautifully illuminated at night, something that makes it a particular delight to photograph. It is built on raised ground overlooking a ford (crossing point) of the River Boyne. The town of Trim is said to take its name from an event in the Táin Bó Cuailnge, in which the great bulls, the white Finnbennach and the brown Donn Cuailnge, battle to the death. Donn Cuailnge wins, and carries the carcase of Finnbennach on his horns around Ireland. He drops pieces of the white bull in different places. At Trim, the liver of the Finnbennach dropped into the river, hence the name Troma or Áth Troim, the ford of the liver.

SOCIAL

Organized social events in Dublin included the ice-breaker reception, held in the spectacular Dining Hall. Here draught Guinness was served allowing first-time visitor to Ireland to sample a local ‘delicacy’. A range of other drinks was also served covering all tastes. Delicious canapes

with locally sourced ingredients were also served. The hospitality staff helped the event to go with a swing. This was also a good opportunity at which to meet and greet delegates, especially those attending just one day of the conference. This group included family members of M.L. Jackson who was honoured at the conference.



Yuanzhi Tang, the 2025 Jackson Award winner (centre), with Dan (left) and Thomas (right) Conlon, grandsons of Marion L. Jackson

Accompanying persons joined a tour to Wicklow and Kilkenny on Monday. Carolyn Hillier helped to ensure that the tour went with a bang and the people enjoyed visiting the 'Marble City' (Kilkenny), the famous monastic site of Glendalough, home to St. Kevin (Co. Wicklow) and a visit to a sheep farm where they witnessed a demonstration of shepherding.

The same group joined together throughout the week, in various numbers to visit Book of Kells, the Guinness Brewery, the Museum of Modern Art and more.

Banquet at Croke Park

A large group of >500 people attended the conference banquet on the Thursday evening. This was held in the Hogan Suite of Croke Park, home to Ireland's national games of hurling and football. The menu consisted of food which was sourced entirely from within a 50 km radius of the stadium. Delegates were entertained by the O'Maolagáin family of traditional Irish musicians.

And there were many more, informal gatherings in local hostelries, restaurants, coffee shops and more.

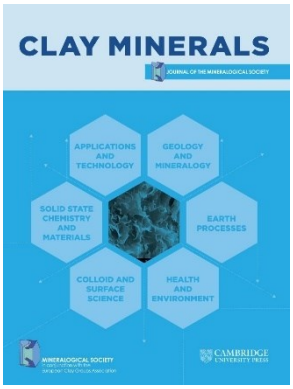
JOURNALS

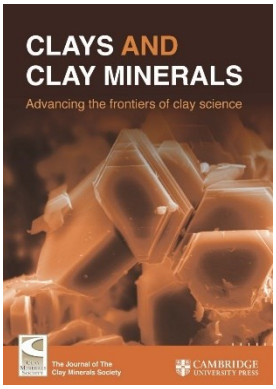
Clay scientists have a large list of journals from which to choose when they publish their work; this reflects the broad nature of the science. The three key journals in clay science, i.e. *Clay Minerals* (Mineralogical Society), *Clays and Clay Minerals* (Clay Minerals Society) and *Applied Clay Science* (Elsevier), were all represented at the conference. Each of the journals hosted a meeting of their respective editorial boards. The editors of *Clay Minerals* and *Clays and Clay Minerals* both enjoyed a dinner on the evenings of their respective meetings. On the final day of the conference, the editorial teams came together to host a short workshop on "How to become a good reviewer". (Video recording to follow.)

Special issues of each of the journals, relating to specific sessions at the conference will be published during 2026. Participants in each of the sessions have been contacted about possible publication. The entire community of delegates was invited to submit their work and this invitation is also extended beyond the conference.

Editors of Clays and Clay Minerals

Editors of Clay Minerals





EQUALITY, DIVERSITY AND INCLUSIVITY

The Mineralogical Society has spent the past five years incorporating the key principles of EDI into all of its activities, including conferences. At ICC, and supported by AIPEA and all partners, we set out to ensure that any scientist who wanted to, would be able to attend the conference and take a real part in it, either in person or remotely.

Remote attendance where you are able to make a presentation, engage with other presenters or event present a poster, are all signs that we welcomed allcomers.

We had 130 delegates attending the conference remotely (20% of all of our delegates) from countries as remote as Cameroon and East Timor. And, between them, the Societies and AIPEA managed to offer support to dozens of delegates who attended in person. We hope that this will become the standard for future conferences. Remote conferencing is not without its challenges (with modest session disruption the result), but it is incumbent upon us all to try. Similarly, we encourage authors from all locations to submit papers to the special issues in our journals and to avail of the support available from members of our Editorial Board to help, especially first-time authors.

AWARDS

International gatherings are the ideal place to recognize those of our colleagues who have excelled in their fields, made a significant contribution to the community, or both, or have other

characteristics which make them suitable for an award. The Clay Minerals Group, The Clay Minerals Society and the AIPEA all made awards during the closing General Assembly/Awards Ceremony on the Friday afternoon of the conference.

Organization	Award	Recipient
CMS = Clay Minerals Society; CMG = Clay Minerals Group of the Mineralogical Society of the UK and Ireland; ICC = International Clay Conference; AIPEA = Association Internationale de l'Étude des Argiles; ECCS = Early Career Clay Scientist		
CMS	Marilyn and Sturges W. Bailey Distinguished Member Award	Hailiang Dong
CMS	Marion L. and Chrystie M. Jackson Mid-career Clay Scientist Award	Yuanzhi Tang
CMS	Warren Huff Clay Science Pathway Award	Xiaojin Zheng
CMS	Pioneer Lecture Award	Chris Greenwell
CMS	Reynolds Cup	Mark Raven and team, CSIRO, Adelaide, Australia
CMS	Student Travel Grant	Jéssica de Carvalho Arjona
CMS	Student Travel Grant (Blair Jones and Jane Flinn Award)	Jakub Ličko
CMS	Student Travel Grant	Malvika Patial
CMS	Student Travel Grant	McCaffrey
CMS	Student Travel Grant	Trung Nguyen
CMS	Student Travel Grant	Zubaer Hosen
CMS	Student Travel Grant	Kayla Russo
CMS	Student Travel Grant	Olivia Terry
CMS	Student Travel Grant	Fabiane Santana
CMS	Student Travel Grant	Elouan Mouro
CMS	Student Travel Grant	Katya Yanez
CMS	Student Research Grant (Robert J. Reynolds Award)	Owen McCaffrey
CMS	Student Research Grant	Viktória Planetová
CMS	Student Research Grant	Md Rafique Uddin
CMG	Honorary Fellowship	C.V. Jeans
CMG	George Brown Lecture	S. Kaufhold
CMG	Travel grant	B. Biswas
CMG	Travel grant	Z. Burton
CMG	Travel grant	D. Dodoo
CMG	Travel grant	M. Ghasemi
CMG	Travel grant	Md. R. Islam
CMG	Travel grant	S. Stewart
AIPEA	Bradley Award	A. Jourdain
AIPEA	Fellowship Award	P. Schroeder
AIPEA	ECCS Research Grant	Md. R. Islam
AIPEA	ECCS Travel Grant	E. Laita Florián
AIPEA	ECCS Travel Grant	U. Ghosh
AIPEA	ECCS Travel Grant	Z.F.M. Burton
AIPEA	AIPEA Travel Grant	A. Asbat

AIPEA	AIPEA Travel Grant	B.I. Obam
AIPEA	AIPEA Travel Grant	E.R. Fernandez
AIPEA	AIPEA Travel Grant	E. Le Gouguec
AIPEA	AIPEA Travel Grant	H. Miri
AIPEA	AIPEA Travel Grant	J. Arjona
AIPEA	AIPEA Travel Grant	Md. Z. Hosen
AIPEA	AIPEA Travel Grant	O. Oyetade
AIPEA	AIPEA Travel Grant	S. Das Gupta
AIPEA	AIPEA Travel Grant	T. Eda
ICC	Student Presentation Prize (Oral)	Dillon Max Stevenson
ICC	Student Presentation Prize (Oral)	Wolfgang Jan Zucha
ICC	Student Presentation Prize (Oral)	Giulia D'Agostino
ICC	Student Presentation Prize (Oral)	Bruno Freitas Pio de Azevedo
ICC	Student Presentation Prize (Oral)	Trung Nguyen
ICC	Student Presentation Prize (Oral)	Celia Martín-Morales
ICC	Student Presentation Prize (Poster)	Viktória Planetová
ICC	Student Presentation Prize (Poster)	María Tijero-Martín
ICC	Student Presentation Prize (Poster)	Daniel Dodoo
ICC	Student Presentation Prize (Poster)	Julien Talon

Bailey Award Winner (Hailiang Dong, right) with incoming CMS President Youjun Deng.

In a break with tradition, we ensured that every student who presented work at the conference was considered for the student award presentations. This was possible because of the introduction of a new online form and the execution of an R programme (written by U. Ghosh) which was used to analyse the results.

CMS Travel Grant Winners

(left) Jessica Arjona and Jakub Ličko, joint winners of the Blair Jones/Jane Flinn Award (CMS); (right) Xiaojin (Andrew) Zheng, winner of the Warren Huff Clay Science Pathway Award (CMS).

Christopher Jeans, Honorary Fellow, CMG

Paul Schroeder, AIPEA Fellow

Stephan Kaufhold, George Brown Lecturer (left) with Sam Shaw, President MSUKI

Mark Raven (left) winner of the Reynolds Cup and CMS President, Ian Bourg

Some of the Student Presentation Prize winners

FINANCIAL

When a national society undertakes to run a conference like ICC, it also takes on the burden of the financial risk associated with such a venture. There is no underwriting and no guarantee of success. This conference had a budget of more than a quarter of a million euros, so this was a significant undertaking for the Mineralogical Society. Very careful budgeting was required. The team needed to know in detail, every single cost associated with running a week-long event for 600+ people. This allowed us to prepare a set of registration figures which would guarantee sufficient income to cover all of the costs, and to ensure that we could run an event of the standard which is expected by ICC audiences. The budget was, inevitably, affected by global inflation of ~25% between the time of the bid and the time of the conference.

At the time of writing, the accountancy associated with XVIII ICC was not complete, but it looks as though there will be a surplus in the region of €15,000 to share between the Mineralogical Society and AIPEA, the governing body.

LEGACY

By their nature, conferences are ephemeral. As organizers, one of our tasks is to attempt to secure legacies from the event. Here are some of the takeaways:

1. The programme and abstracts volume for the conference is available at https://icc.aipea.org/programme-and-abstracts-2025/.

2. All of the authors have been invited to submit papers to a range of special issues in each of the three 'main' clay journals. With luck, we should see lots of papers published during 2026 bearing ICC livery.

3. All of the workshops and sessions at ICC Dublin were recorded. The organizers have sought permission from all of the presenters to publish the videos on the Mineralogical Society's YouTube channel. Some of this work is already underway but it is expected to take some time; there are ~300 hours of video!

4. Each time a conference runs, the organizers learn new tricks. The organizers of the Dublin event are happy to share this with organizers of future events.

SUMMARY

This was the 18th, and final, International Clay Conference. Future international clay events will be referred by the term "Clay" and the year, so colleagues in Madrid will organize "Clay 2027". MSUKI was proud to host the final event in the ICC series and we look forward to joining our colleagues in Spain in 2027.

Handover of the AIPEA flag

ACKNOWLEDGEMENTS

As you will realise from the text above, there are many people who deserve our thanks for the work they did to make our conference a success:

- Trinity College Dublin and its staff (Events, Catering, Assistants, Ambassadors)
- Fitting Image (AV support)
- Croke Park Banqueting
- Beachfield Bus Hire
- Printing Services

The AIPEA trusted and accepted the MSUKI bid and granted it the opportunity to organize a conference on its behalf. This is a significant gesture as the reputation of AIPEA itself is at stake each time an event runs. Thank you to President Bruno Lanson, past-president Reiner Dohrmann and to all of the other officers and members of AIPEA Council for their trust and their support.

Bruno Lanson, President AIPEA

Pete Ryan, Secretary AIPEA

We are also indebted to Beppe Fiore and colleagues at Digilabs. They are responsible for the registration and abstract submission system which we used for the conference. Beppe also designed the logo and the structure of the website which is used for the conference. This is a great start for any conference organizer, to have this much work already done before you start!

Field trips: Mark Cooper, Mike Simms, David Chew (Giant's Causeway) and Steve Hillier and Helen Pendlowski (Cement Factory).

David Chew and Emma Tomlinson were co-convenors and valuable allies in the organization of both EMC 2024 and ICC 2025. Making space in the Geology Building available for meetings and for storage of exhibitor goods was very helpful in the leadup to and during the event. They also helped with programming, practical matters during the event and with field trips.

We mentioned the scientific committee and session chairs earlier in the report and we thank them again here.

There were a few people whose contribution was exceptional: Helen Pendlowski, Pete Ryan and Sabine Petit for managing the student judging process so well. Helen Pendlowski was also responsible for working with our team of conference volunteers, and ensuring the smooth operation of our scientific sessions. She helped with the overall running of the event and setting up the registration area, etc.

Helen Pendlowski, Chair, CMG

Andrea Pierrozzi is a PhD student at TCD. Clay science is not his field but as soon as he became aware of the conference, he immediately volunteered his assistance for ICC (having helped out in the previous year at EMC). Even three weeks after the event, he was still helping out with logistical matters.

And a special thanks to co-organizer, Russell Rajendra. He is the Mineralogical Society's finance manager. He liaised with delegates regarding their registrations and maintained a flawless set of accounts, essential in such an environment, as this enabled the team to make decisions, confident in all matters financial. The Mineralogical Society typically operates in a £stg environment but opened a €euro bank account for the purposes of this event. This essentially meant a separate set of accounts, and handling of VAT returns to both the Irish and the UK authorities, so a significant additional workload.

Working on conferences is challenging, but when a good outcome is achieved is also enormously rewarding. Thanks to every delegate who contributed to ICC 2025.

Russell Rajendra, Steve Hillier and Kevin Murphy
September 2025