

出國報告（出國類別：開會）

2024 第九屆歐洲化學大會

服務機關：環境部化學物質管理署

姓名職稱：齊慕凡技士

派赴國家/地區：愛爾蘭都柏林

出國期間：113年7月5日至7月14日

報告日期：113年7月29日

摘要

歐洲化學大會每兩年辦理一屆，是化學領域的一大盛事。本次第九屆歐洲化學大會由愛爾蘭化學研究所主辦，113年7月7日至7月11日於愛爾蘭都柏林會議中心舉行，大會涵蓋了八大主題，包含「合成有機化學的進展」、「催化作用」、「化學與生物學的結合促進健康」、「化學教育、歷史、文化遺產及倫理」、「能源、環境及永續發展」、「奈米化學／材料」、「物理化學、分析化學和計算化學」、「超分子化學」等。

本次出國計畫主要目的是瞭解全球化學品永續發展趨勢及綠色化學的最新進展，並將這些知識應用於我國的政策推動和業務發展。本次出國深入瞭解綠色化學及其教育推廣的重要性。美國綠色化學之父 John Warner 教授強調，綠色化學不僅需技術突破，還需考慮性能和成本，以確保其普及性和可行性。他還提到，教育是推動綠色化學的關鍵，並鼓勵更多學術機構加入「綠色化學承諾」；另外透過參與會議，瞭解到化學教育的新方法如虛擬實驗室和化學教育遊戲，有助於激發學生學習興趣，並提升學生的實驗技能和解決問題的能力。此外，會議上也探討了人工智慧在化學研究中的應用，如分子設計、實驗預測和文獻挖掘，這些技術可顯著提升研究效率和準確性。我國可以借鑑這些成功經驗，推動 AI 技術在化學領域的應用。

本次大會的參與不僅拓展了視野，還為未來的政策制定和教育推廣提供了寶貴的參考。最大的收穫在於現場邀請 John Warner 教授以線上或實體參與我國 114 年綠色化學相關獎項的頒獎典禮，鼓勵在綠色化學領域深耕的傑出獲獎者們；另外，會中獲得的免費綠色化學學習資源和研究平台，可以納入本署既有的綠色化學宣導教材中推廣，鼓勵不同領域進行合作研究，探索更高效、更環保的化學製造過程；再者，獲得德國化學學會講者同意，該講者樂意提供 ChemEscape 桌遊素材供我國使用，後續若轉譯成繁體中文，將可應用於我國高中化學教育上。

目次

一、目的.....	3
二、過程.....	4
三、心得及建議.....	15
附錄（大會議程）.....	17

一、目的

歐洲化學會 (European Chemical Society, 簡稱 EuChemS) 是一個歐洲非營利組織, 代表來自 50 個成員協會和其他化學相關組織的 130,000 多名化學家。EuChemS 旨在促進來自不同國家的科學家社群, 並為他們提供交流想法、溝通、合作工作項目和發展網絡的機會。EuChemS 依賴這個社群的知識, 為歐洲層面的政策制定者提供可靠的科學建議, 以更好地指導他們的決策工作。

EuChemS 每兩年辦理一屆歐洲化學大會 (EuChemS Chemistry Congress), 是化學領域的一大盛事。本次第九屆歐洲化學大會 (9th EuChemS Chemistry Congress, 簡稱 ECC9) 由愛爾蘭化學研究所 (Institute of Chemistry of Ireland, 簡稱 ICI) 主辦, 會議地點在愛爾蘭都柏林市的都柏林會議中心 (Convention Centre Dublin, 簡稱 CCD, 如圖 1)。ECC9 涵蓋多個化學領域, 包括「合成有機化學的進展」、「催化作用」、「化學與生物學的結合促進健康」、「化學教育、歷史、文化遺產及倫理」、「能源、環境及永續發展」、「奈米化學／材料」、「物理化學、分析化學和計算化學」、「超分子化學」等八大主題。

藉參與大會, 瞭解各國化學品永續發展趨勢, 綠色化學最新進展、綠色化學教育發展、推廣等成果及未來展望, 有助於我國後續業務推動及施政之參考。



圖 1、都柏林會議中心

二、過程

本次行程如表 1，ECC9 舉辦時間為 113 年 7 月 7 日至 7 月 11 日（如圖 2），每日議程多集中在上午 8 時 30 分至下午 6 時 45 分，最多進行有 14 個平行會話，包括口頭報告及海報展示等，議程詳如附錄。

表 1、行程概要

日期	工作內容概要
113.7.5 至 113.7.6	去程搭機(桃園國際機場至都柏林機場，中途於法蘭克福機場轉機)
113.7.7	參加 ECC9 開幕式及歡迎會
113.7.8 至 113.7.11	參加 ECC9
113.7.12	資料整理
113.7.13 至 113.7.14	返程搭機(都柏林機場至桃園國際機場，中途於希斯洛機場轉機)

表 2、同行人員名單

服務單位	姓名	職稱
環境部化學物質管理署	齊慕凡	技士
中原大學	黃佑安	專案助理
中原大學	林宛俞	顧問

	Sunday 7th July	Monday 8th July	Tuesday 9th July	Wednesday 10th	Thursday 11th July	
	<i>Convention Centre Dublin</i>					
08:00						08:00
08:30		ECC-9 PLENARY SPEAKER	ECC-9 PLENARY SPEAKER 3	ECC-9 PLENARY SPEAKER 5	ECC-9 PLENARY SPEAKER 7	08:30
09:00						09:00
09:30						09:30
10:00		MORNING COFFEE BREAK				10:00
10:30		Invited Speaker Oral Sessions Flash Sessions	10:30			
11:00						11:00
11:30						11:30
12:00		POSTER SESSION EXHIBITION & LUNCH				12:00
12:30						12:30
13:00						13:00
13:30		Invited Speaker Oral Sessions Flash Sessions	13:30			
14:00						14:00
14:15						14:15
14:30						14:30
15:00						15:00
15:30		AFTERNOON COFFEE BREAK				15:30
16:00		Invited Speaker Oral Sessions	Invited Speaker Oral Sessions	Invited Speaker Oral Sessions	Invited Speaker Oral Sessions	16:00
16:30						16:30
17:00						17:00
17:15	OPENING CEREMONY	ECC-9 PLENARY SPEAKER	ECC-9 PLENARY SPEAKER	ECC-9 PLENARY SPEAKER	ECC-9 PLENARY SPEAKER	17:15
17:30						17:30
18:00						18:00
18:15						18:15
18:30		POSTER SESSION				18:30
18:45						18:45
19:00	WELCOME RECEPTION					19:00
19:30						19:30
20:00				CONFERENCE DINNER		20:00
20:30						20:30
21:00						21:00
21:30						21:30

圖 2、ECC9 議程總覽



圖 3、ECC9 開幕式及場地配置

(一) 會議重點摘錄

1、未來透過化學實現更永續方法

- (1) 美國 John Warner 教授是綠色化學領域的聯合創始人之一，與 Paul Anastas 教授共同提出「綠色化學 12 原則」，是推動永續技術的重要指南。John Warner 教授強調，綠色化學不僅需要技術上的突破，還需要考慮性能和成本，以確保技術的可行性和普及性。他指出，產業界在綠色化學方面的進展有時甚至超越了學術界，並強調了創新和發明在推動可持續技術中的關鍵作用。
- (2) John Warner 教授創立的 Beyond Benign 組織致力於將綠色化學的原則納入化學教育中，並推動全球「綠色化學承諾」(Green Chemistry Commitment, 簡稱 GCC)。GCC 旨在支持世界各地的大學、學院、學校和中心在其課程中融入綠色化學。該承諾是高等教育機構表明其開始、繼續或優化其獨特綠色化學旅程的意圖信號，從而為未來的勞動力做好準備，以應對社會和環境挑戰。現在，來自 15 多個國家的超過 150 個機

構已成為這個不斷壯大的項目的一部分，最終目標是倡導一個多樣化、鼓舞人心且充滿活力的綠色化學社區，能夠提供實現永續未來所需的變革。John Warner 教授強調，只有改變化學教育，才能培養具備解決未來挑戰能力的人才。他呼籲更多的學術機構加入這一承諾，共同推動綠色化學的教育和應用。

- (3) John Warner 教授強調化學對實現永續發展具有核心作用，學術界和產業界應共同努力推動綠色化學的發展。通過改變教育體系和促進創新，可以更好地應對未來的挑戰，實現永續發展目標。

2、人工智慧與化學的未來

- (1) Nina Kaun 博士強調 AI 是應該被利用的工具「人工智慧不會取代人類，但有人工智慧的人類將取代沒有人工智慧的人類」，AI 在化學中的應用分為三大類：
 - A. 分子和性質設計：在藥物設計和材料資訊學中廣泛應用。
 - B. 化學實驗：包括合成反應預測和實驗設計。
 - C. 文獻挖掘與洞察：從大量文獻中提取有價值的信息。
- (2) 過去，用於化學合成的逆合成分析只能完全依靠化學家的專業知識和時間，Nina Kaun 博士說明 Reaxys 是最大的化學資料庫，展示了 Reaxys 與 AI 結合，擁有化學合成的一流技術，特別是從化學文獻中識別和提取化學物質的反應資訊，提供科學可靠的預測，通過逆合成路徑設計輔助化學家。
- (3) 此次會議展示了 AI 技術在化學研究中的廣泛應用，特別是在文獻挖掘和實驗設計方面。通過與研究社群的緊密合作，Elsevier 致力於推動 AI 技術在化學領域的進一步發展。

3、讓化學更綠色：未來 25 年

- (1) 「綠色化學 12 原則」已提出逾 25 年，在過去的經驗，要以系統思維（結合考量相關因子，如合成、生命週期、毒理學等）全面評估化學過程的綠色性質，沒有系統思維的情況下容易將某些過程誤認為環境友善，也就是化學合成過程可能複雜且耗能，並不總是比傳統方法更環保；此外，綠色化學需要綜合考慮經濟性和永續性。
- (2) 綠色化學的未來需要依靠跨學科合作、創新思維和政策推動，重點如下：
 - A. 在學界，重要的是利用跨學科合作和設計思維優化化學製造。通過系統思維，可以更好地理解和優化化學過程，從而實現更永續的結果。
 - B. 在業界，實現綠色轉型的主要障礙是大規模產業的保守性和資產報廢的高成本，惟中小企業和創業公司在這方面有更多的靈活性和機會，所以年輕化學家可透過創業，利用創新技術和市場機會推動綠色化學的發展。
 - C. 需要通過政策和市場的雙重推動來實現化學工業的綠色轉型。儘管法規的推動力有限，但市場需求和消費者行為的變化可以促進綠色產品的發展。
- (3) 未來綠色化學的關鍵是數據共享和科學研究，化學家們應積極發表和分享研究成果，推動綠色化學的進一步發展。本次會議中提供免費的綠色化學學習資源（如圖 4）和研究平台（如圖 5），鼓勵與會者積極參與其中。

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圖 4、綠色化學學習資源

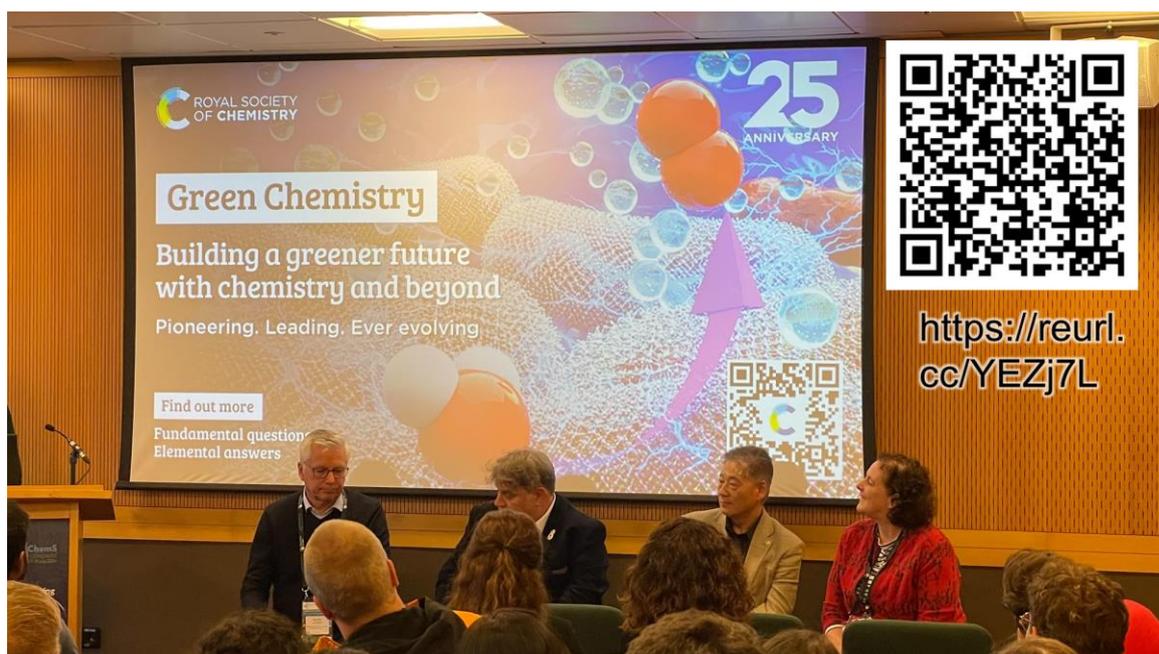


圖 5、綠色化學研究平台

4、遊戲化和虛擬實境化學教育

- (1) 德國化學學會為高中生設計了基於實驗室的化學逃脫桌遊 (ChemEscape)，該遊戲容易整合到學校課程中 (1 位老師、最多 90 分鐘及適合最多 30 名學生)，以便更好地吸引和教育高中生學習化學。在遊戲中，學生需要利用學校化學課的基礎知識來解決不同的謎題。謎題涵蓋了化學的不同領域 (如圖 6)，包括電化學、光化學、酸鹼化學、立體化學和化學相關計算，使學生能夠在 ChemEscape 中學習及探索多個化學領域。ChemEscape 的材料可以在指定網站上訂購，德國學校訂購這些材料皆為免費。
- (2) 在愛爾蘭的梅努斯大學、香農理工大學、鄧多克理工學院、科克大學及都柏林城市大學等 5 所大學，在 4 年內與約 2,500 名學生、教育技術供應商和企業合作夥伴合作，以虛擬實驗室來增強學生的體驗並改善他們在實驗科學方面的學習成果 (如圖 7)，獲得了國家教學獎項。重點如下：

- A. 虛擬實驗室技術的應用：包括使用Labster 教育技術平台及與Fourth Reality 合作，並開發自有的教學資源，包括：
- 模擬真實的實驗環境，提高學生的實驗操作技能。
 - 色層分析實驗：學生在實驗前需完成虛擬實驗模擬，通過模擬學習正確的實驗操作步驟。實驗過程中，學生需自行設計實驗方案並進行操作，錯誤操作需指出並改正。
 - 污染物分析模擬：學生分組進行污染物分析，需制定標準操作程序，並在中期對其他組的程序進行評估和反饋。這種方式提高了學生的團隊合作和問題解決能力。
 - 光譜儀內部運行過程的動畫演示。
- B. 實施虛擬實驗室技術過程中面臨一些挑戰，如學生對新技術的適應、設備和技術的穩定性等。未來改進方向包括進一步優化虛擬實驗內容，提高學生的實驗技能和學習效果，並擴展虛擬實驗室的應用範圍。



圖 6、ChemEscape 涵蓋的化學領域

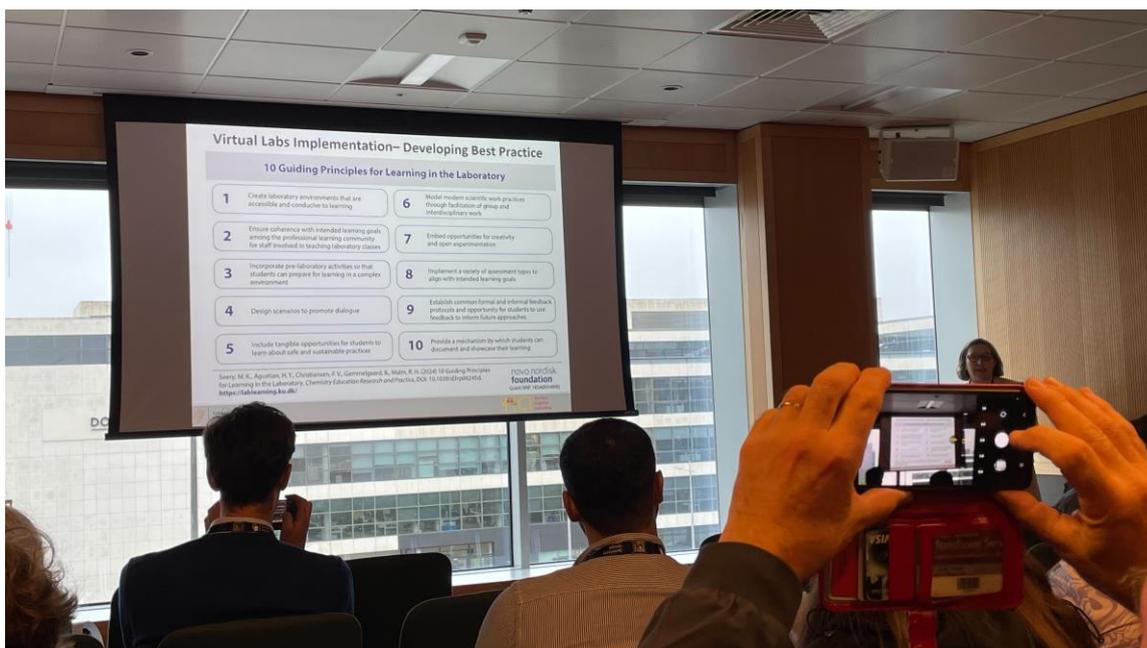


圖 7、虛擬實驗室實施十條指導原則

5、透過綠色化學教育實現永續未來

- (1) 綠色化學領域為科學家提供了一個設計化學產品的框架，以減少、最小化、甚至完全消除對人類健康與環境的危害及負面影響。通過應用綠色化學原理，科學家能評估更良性的替代品，並通過開發更綠色、更高效及更具有成本效益的創新技術改善我們的社會。Glenn Hurst 博士舉例道：
- A. Cyrene 是約克大學開發的新溶劑，替代有毒的 N-甲基吡咯烷酮(NMP，廣泛用於藥物配方、電子工業和材料製造。全球年產量約為 12.5 噸)。Cyrene 已經商業化，並被用於實驗室教學中，提供了一個較為安全的替代品。
- B. 研究團隊開發了一種名為 TMO 的溶劑，作為甲苯的替代品。這是一種更加環保的選擇，並且可以在實驗室中自行製作，不需要與外部合作。
- (2) 綠色化學教育是實現分子層面永續未來的基本工具，Glenn Hurst 博士強調通過學生參與及系統思維(系統思維在綠色化學領域的重要性在本

文前面已有提過)，綠色化學教育能夠顯著推動永續發展。利用各種創新教學方法，不僅提升了教學質量，也讓學生在實踐中成為全球教育者。

Glenn Hurst 博士提到的創新教學方法如下：

- A. 開發了在線學習平台，該平台使用甘蔗生物精煉廠為模型，教授系統思維。學生們能夠通過動態系統思維來優化生物精煉廠的設計，考慮現有和未來的參數變化。
- B. 開發了一款卡牌遊戲，學生們可以在遊戲中設計和運營自己的回收工廠，這需要他們深入理解所選系統並應對各種變化。此外，將這個概念推廣到手機遊戲供學生遊玩，學習綠色化學的原則。
- C. 使用社交媒體平台，如 Snapchat 和 TikTok，來進行化學教育。學生們創建並運營自己的 TikTok 賬號，分享綠色化學和永續發展的相關內容。

(3) 另有 Gillian Collins 博士分享了綠色化學教育的經驗和影響，重點如下：

- A. 課程設計與改進：在課程中逐步引入 12 項綠色化學原則，並開發新的教學內容，使綠色化學融入到不同的化學課程中。這樣可以使學生在學習過程中逐漸熟悉綠色化學的概念。
- B. 實驗室實踐：通過替換傳統實驗中的有害溶劑，並引入新的實驗項目，提升實驗室實踐的環保性和安全性。
- C. 外部活動：開展針對學生組織的外展活動，如與環保署合作的講座和工作坊，提升學生對化學及其環境影響的認識。
- D. 青少年教育：在中小學階段引入綠色化學教育，通過簡單的實驗和活動，培養孩子們的環保意識和科學興趣。

E. 未來計劃與展望：通過在線學習和實驗室項目強調系統思維，利用虛擬實境等新技術提升教學效果，並鼓勵更多高等教育機構參與 GCC 或其他相關項目，推動綠色化學教育。

(5) 綜上，綠色化學教育不僅提高了學生的環保意識，也為他們的職業發展奠定了基礎。通過課程設計、實驗室實踐和外部活動等多種方式，可以在教育中有效地融入綠色化學理念，推動永續發展。參與 GCC 等倡議不僅為學術機構提供了資源和支持，也促進了全球綠色化學教育的合作與進步。

(二) 意見交流

向美國綠色化學之父 John C. Warner 教授致謝，感謝其於我國 112 年「第 3 屆綠色化學 共創永續 聯合頒獎典禮暨成果發表會」錄製開場演說，鼓勵在綠色化學領域深耕的傑出獲獎者們，並表示「第 4 屆綠色化學應用及創新獎」及「第 4 屆大專校院綠色化學創意競賽」起跑，114 年將辦理頒獎典禮，屆時規劃再邀請 John Warner 教授線上或實體參與。John Warner 教授表示樂意參與，並鼓勵我國大學加入 GCC（如圖 8）。



圖 8、與美國綠色化學之父 John C. Warner 教授交流



圖 9、與 107 年諾貝爾化學獎得主 Frances H. Arnold 教授合影

三、心得及建議

- 1、在本次大會中，John Warner 教授強調綠色化學的核心價值，並指出教育是推動綠色化學的關鍵。會中介紹的 GCC，不僅在高等教育機構中得到了廣泛支持，還鼓勵更多學術機構參與其中。我國應鼓勵國內大學加入 GCC，並將綠色化學的概念融入到化學相關課程中。
- 2、Nina Kaun 博士在會議中強調了 AI 在化學中的重要應用，包括分子設計、實驗預測和文獻挖掘等。這些技術可以顯著提升化學研究和產業的效率和準確性。有鑑於此，可建議國內化學研究機構和產業界採用 AI 技術，建立 AI 應用示範項目，並提供相關培訓和資源，幫助研究人員掌握 AI 技術的應用方法，提升我國化學研究和創新的競爭力；另外，本署已有應用類似的 AI 技術開發化學物質綠色替代診斷模組（Searching, Assessment, and Screening，簡稱 SAS），亦可與 Reaxys 資料庫的 AI 化學合成技術相互比對，師夷之長技。
- 3、會議強調了綠色化學發展需要跨學科合作和創新思維。未來的綠色化學研究不僅需要化學家的專業知識，還需要結合工程學、環境科學、經濟學等

多學科的智慧。為此，我國可鼓勵不同領域的專家進行合作研究，探索更高效、更環保的化學製造過程；另外，會中獲得的綠色化學學習資源和研究平台，可以納入本署既有的綠色化學宣導教材中推廣。

- 4、會議中展示的 ChemEscape 桌遊和虛擬實驗室技術，為化學教育提供了新的思路和工具。這些創新教學方法不僅能提高學生對化學的興趣，還能增強他們的實驗技能和問題解決能力。我國可借鑑這些成功經驗，引入和開發類似的教育工具和平台，並在中學和大學中推廣使用，培養更多具備創新精神和實踐能力的化學人才；實際上在會場已獲得德國化學學會講者同意，該講者樂意提供 ChemEscape 桌遊素材供我國使用，後續將以電子郵件進一步聯絡。

附錄

9th EuChemS Chemistry Congress

Schedule

Sunday, 7 July, 2024

16:00-16:30 Auditorium

Opening with ICI President, EuChemS President and Dignitary

16:30-17:30 Auditorium

Plenary Lecture 1 - Professor A.P. de Silva

Chairperson: Thorri Gunnlaugsson
Supramolecular Chemistry

17:30-18:30 Auditorium

EuChemS Gold Medal Award Lecture

Catalysis

18:30-20:00 Auditorium

Welcome Reception

9th EuChemS Chemistry Congress

Schedule

Monday, 8 July, 2024

08:30-09:30 Auditorium

Plenary Lecture 2 - Professor Omar M. Yaghi

Chairperson: Stefanie Dehnen

Nanochemistry/Materials

09:30-10:00 Liffey (A+B)

Tea / Coffee Break with Exhibition and Posters

10:00-12:00 Auditorium

Catalysis - Organocatalysis

Chairperson: Montserrat Diéguez

Catalysis

10:00-12:00 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 1

Chairperson: Bill Morandi, Mariola Tortosa

Advances in Synthetic Organic Chemistry

10:00-12:00 Wicklow Hall 1

Energy, Environment and Sustainability - Biomass Valorisation for Material Innovation

Chairperson: Walter Leitner

Energy, Environment and Sustainability

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**ROYAL SOCIETY
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10:00-12:00 Liffey Hall 2

Chemistry Meets Biology for Health 1

Chairperson: Maria Laura Bolognesi
Chemistry Meets Biology for Health

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**ROYAL SOCIETY
OF CHEMISTRY**

10:00-12:00 Liffey Hall 1

Supramolecular Chemistry 1

Chairperson: Peter Crowley
Supramolecular Chemistry

10:00-12:00 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Physical and Analytical 1

Chairperson: Christopher Brett, Vessela Tsakova
Physical, Analytical and Computational Chemistry

10:00-12:00 EcoCem Room

Nanochemistry/Materials 1

Chairperson: Peter Roesky
Nanochemistry/Materials

10:00-12:00 Wicklow Meeting Room 1

Catalysis - Heterogeneous Catalysis 1

Chairperson: Martin Albrecht
Catalysis

10:00-12:00 Wicklow Meeting Room 2

Physical, Analytical and Computational Chemistry - Computational 1

Chairperson: Fernanda Duarte, Tanja Van Mourik
Physical, Analytical and Computational Chemistry

10:00-12:00 Liffey Meeting Room 3

Chemistry Meets Biology for Health 2

Chairperson: Celine Marmion
Chemistry Meets Biology for Health

10:00-12:00 Wicklow Meeting Room 3

EYCN - The Elements of Fair and Trustworthy Scientific Publishing

Chairperson: Noah Al-Shamery
EYCN

10:00-11:30 Liffey Meeting Room 1

Mini-Symposium 2 - Local and Global Approaches Towards a More Sustainable Future through Chemistry

Chairperson: João Borges, Juliana Vidal
Energy, Environment and Sustainability

10:00-11:30 Wicklow Meeting Room 4

Mini-Symposium 3 - EuChemS Division of Glycoscience - Advances in synthetic carbohydrate chemistry and catalysis

Chairperson: Joseph Byrne
Advances in Synthetic Organic Chemistry

10:00-11:30 Wicklow Meeting Room 5

Mini-Symposium - Single Atom Catalysis

Chairperson: Gianvito Vilé
Catalysis

12:00-13:30 Liffey (A+B)

Lunch with Exhibition and Posters

13:30-15:30 Auditorium

Catalysis - Biocatalysis 1

Chairperson: Jan Deska
Catalysis

13:30-15:30 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 2

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

13:30-15:30 Wicklow Hall 1

Energy, Environment and Sustainability - Green Hydrogen and Ammonia

Chairperson: Paul Anastas
Energy, Environment and Sustainability

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ROYAL SOCIETY
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13:30-15:30 Liffey Hall 2

Chemistry Meets Biology for Health 3

Chairperson: Ewen Bodio
Chemistry Meets Biology for Health

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ROYAL SOCIETY
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13:30-15:30 Liffey Hall 1

Supramolecular Chemistry 2

Chairperson: Hennie Valkenier
Supramolecular Chemistry

13:30-15:30 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Computational 2

Chairperson: Debashree Chakraborty
Physical, Analytical and Computational Chemistry

13:30-15:30 EcoCem Room

Nanochemistry/Materials 2

Chairperson: Christian Nijhuis
Nanochemistry/Materials

13:30-15:30 Wicklow Meeting Room 1

Catalysis - Heterogeneous Catalysis 2

Chairperson: Beatriz Roldan Cuenya
Catalysis

13:30-15:30 Wicklow Meeting Room 2

Nanochemistry/Materials 3

Chairperson: Lorraine Byrne
Nanochemistry/Materials

13:30-15:30 Liffey Meeting Room 3

Advances in Synthetic Organic Chemistry 3

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

13:30-15:30 Wicklow Meeting Room 3

EYCN - How and Why You Should Engage in Science Policy

Chairperson: Maximilian Menche
EYCN

13:30-15:00 Liffey Meeting Room 1

Mini-Symposium - ChemistryEurope Mini-Symposium

Chairperson: Anne Nijs

13:30-15:00 Wicklow Meeting Room 4

Mini-Symposium - EuChemS Division of Glycoscience - Chemical glycobiology for human health

Chairperson: Michelle Kilcoyne
Chemistry Meets Biology for Health

15:30-16:00 Liffey (A+B)

Tea / Coffee Break with Exhibition and Posters

16:00-17:00 Auditorium

Catalysis - Biocatalysis 2

Chairperson: Christopher Whiteoak
Catalysis

16:00-17:00 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 4

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

16:00-17:00 Wicklow Hall 1

Energy, Environment and Sustainability - Material Innovation

Chairperson: Markus Antonietti
Energy, Environment and Sustainability

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16:00-17:00 Liffey Hall 2

Chemistry Meets Biology for Health 4

Chairperson: Robert Elmes
Chemistry Meets Biology for Health

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ROYAL SOCIETY
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16:00-17:00 Liffey Hall 1

Supramolecular Chemistry 3

Chairperson: Jamie Lewis
Supramolecular Chemistry

16:00-17:00 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Computational 3

Chairperson: Kate Bromfield
Physical, Analytical and Computational Chemistry

16:00-17:00 EcoCem Room

Nanochemistry/Materials 4

Chairperson: Karl Mandel
Nanochemistry/Materials

16:00-17:00 Wicklow Meeting Room 1

Catalysis - Heterogeneous Catalysis 3

Chairperson: Karine Philippot
Catalysis

16:00-17:00 Wicklow Meeting Room 2

Supramolecular Chemistry 4

Chairperson: Abed Saady
Supramolecular Chemistry

16:00-17:00 Liffey Meeting Room 3

Advances in Synthetic Organic Chemistry 5

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

16:00-17:00 Wicklow Meeting Room 3

EYCN - Dual-Use in Chemistry - The Challenge of Ensuring Chemistry Benefits All While Preventing Misuse

Chairperson: Marie Désirée Schlemper-Scheidt
EYCN

16:00-17:00 Liffey Meeting Room 1

Supramolecular Chemistry 5

Chairperson: Steve Goldup
Supramolecular Chemistry

16:00-17:00 Wicklow Meeting Room 4

Chemistry Meets Biology for Health 5

Chairperson: Isabel Rozas
Chemistry Meets Biology for Health
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16:00-17:00 Wicklow Meeting Room 5

Physical, Analytical and Computational Chemistry - Physical and Analytical 2

Chairperson: Gyöző G. Láng
Physical, Analytical and Computational Chemistry

17:00-17:15 Liffey (A+B)

Comfort break

17:15-18:15 Auditorium

Plenary Lecture 3 - Professor Frances H. Arnold

Chairperson: Angela Casini

Chemistry Meets Biology for Health

18:15-18:45 Liffey (A+B)

Poster Session 1

All flash presentations from Monday sessions will be displayed in Poster Session 1.

9th EuChemS Chemistry Congress

Schedule

Tuesday, 9 July, 2024

08:30-09:30 Auditorium

Plenary Lecture 4 - Professor Brigitte Van Tiggelen

Chairperson: Annette Lykknes
Education, History, Culture Heritage, and Ethics in Chemistry

09:30-10:00 Liffey (A+B)

Tea / Coffee Break with Exhibition and Posters

10:00-12:00 Auditorium

Catalysis - Photocatalysis 1

Chairperson: Paolo Melchiorre
Catalysis

10:00-12:00 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 6

Chairperson: Pat Guiry
Advances in Synthetic Organic Chemistry

10:00-12:00 Wicklow Hall 1

Energy, Environment and Sustainability - Carbon Dioxide as Feedstock

Chairperson: Alessandra Quadrelli
Energy, Environment and Sustainability

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**ROYAL SOCIETY
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10:00-12:00 Liffey Hall 2

Chemistry Meets Biology for Health 6

Chairperson: Boris Vauzeilles
Chemistry Meets Biology for Health

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10:00-12:00 Liffey Hall 1

Supramolecular Chemistry 6

Chairperson: Steve Goldup
Supramolecular Chemistry

10:00-12:00 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Physical and Analytical 3

Chairperson: Manel Del Valle
Physical, Analytical and Computational Chemistry

10:00-12:00 EcoCem Room

Nanochemistry/Materials 5

Chairperson: Anke Krueger
Nanochemistry/Materials

10:00-12:00 Wicklow Meeting Room 1

Education, History, Culture Heritage, and Ethics in Chemistry - Cultural heritage, history of chemistry and education

Chairperson: Mary Virginia Orna
Education, History, Culture Heritage, and Ethics in Chemistry

10:00-12:00 Wicklow Meeting Room 2

Energy, Environment and Sustainability - Nutrition and Food

Chairperson: Chao-Jun Li
Energy, Environment and Sustainability

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10:00-12:00 Liffey Meeting Room 3

Physical, Analytical and Computational Chemistry - Computational 4

Chairperson: Adriana Pietropaolo
Physical, Analytical and Computational Chemistry

10:00-12:00 Wicklow Meeting Room 3

EYCN - Professional Development & CV Writing Workshop

Chairperson: Noah Al-Shamery
EYCN

10:00-11:30 Liffey Meeting Room 1

Workshop - Ethics in Chemistry

Education, History, Culture Heritage, and Ethics in Chemistry

10:00-11:30 Wicklow Meeting Room 4

Mini-Symposium - Division of Glycoscience - Analytical and computational glycoscience for mapping human health and pathogenesis

Chairperson: Clare Mahon
Physical, Analytical and Computational Chemistry

10:00-11:30 Wicklow Meeting Room 5

Mini-Symposium - Showcasing the Irish Biological Inorganic Chemistry Society - Advancing Inorganic Chemistry in Life Sciences and Health

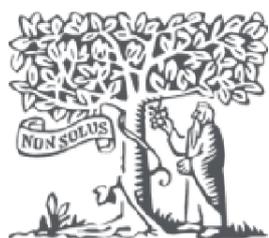
Chairperson: John M. Kelly
Chemistry Meets Biology for Health

12:00-13:30 Liffey (A+B)

Lunch with Exhibition and Posters

12:35-13:10 Liffey Hall 1

Elsevier Sponsored Session: The Future of Chemistry with AI



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Explore the fascinating intersection of artificial intelligence and chemistry with us! During this session, we will delve into the synergies between **ScienceDirect** and **Reaxys**, uncovering how AI is transforming chemistry research.

Our esteemed speakers, **Dr. Nina Kaun**, Senior Product Manager in Chemistry, and **Dr. Felisa van Hasselt**, Senior Product Manager for ScienceDirect, will guide us through the latest AI advancements. Discover how AI is revolutionizing molecule prediction, experimentation methods, and the extraction of insights from scientific literature and patents.

What to Expect:

Don't miss this opportunity to discover the powerful impact of AI on chemistry research and education!

13:30-15:30 Auditorium

Catalysis - Photocatalysis 2

Chairperson: Antoni Llobet
Catalysis

13:30-15:30 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 7

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

13:30-15:30 Wicklow Hall 1

Energy, Environment and Sustainability - Green Synthetic Methodologies

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13:30-15:30 Liffey Hall 2

Chemistry Meets Biology for Health 7

Chairperson: Ramon Vilar

Chemistry Meets Biology for Health

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ROYAL SOCIETY
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13:30-15:30 Liffey Hall 1

Supramolecular Chemistry 7

Chairperson: Charlie McTernan

Supramolecular Chemistry

13:30-15:30 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Physical and Analytical 4

Chairperson: Giovanni Valenti

Physical, Analytical and Computational Chemistry

13:30-15:30 EcoCem Room

Nanochemistry/Materials 6

Chairperson: Brandi Cossairt

Nanochemistry/Materials

13:30-15:30 Wicklow Meeting Room 1

Education, History, Culture Heritage, and Ethics in Chemistry - Education and history of chemistry

Chairperson: Annette Lykknes

Education, History, Culture Heritage, and Ethics in Chemistry

13:30-15:30 Wicklow Meeting Room 2

Energy, Environment and Sustainability - Materials for Energy Conversion

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13:30-15:30 Liffey Meeting Room 3

Physical, Analytical and Computational Chemistry - Computational 5

Chairperson: Matthias Vandichel
Physical, Analytical and Computational Chemistry

13:30-15:30 Wicklow Meeting Room 3

EYCN - Roads to Success

Chairperson: Maximilian Menche
EYCN

13:30-15:00 Liffey Meeting Room 1

Workshop - Ethics in Chemistry

Education, History, Culture Heritage, and Ethics in Chemistry

13:30-15:00 Wicklow Meeting Room 4

Mini-Symposium - Division of Glycoscience -Applied Glycoscience for materials and sustainability

Chairperson: Clare Mahon
Energy, Environment and Sustainability

13:30-15:00 Wicklow Meeting Room 5

Workshop - ERC Workshop: Navigating the Path Towards Empowering Funding Opportunities

Chairperson: Gearóid Ó Máille
Education, History, Culture Heritage, and Ethics in Chemistry

15:30-16:00 Liffey (A+B)

Tea / Coffee Break with Exhibition and Posters

16:00-17:00 Auditorium

Catalysis - Photocatalysis 3

Chairperson: Maricruz Sanchez-Sanchez
Catalysis

16:00-17:00 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 8

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

16:00-17:00 Wicklow Hall 1

Energy, Environment and Sustainability - Material Innovation

Energy, Environment and Sustainability

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**ROYAL SOCIETY
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16:00-17:00 Liffey Hall 2

Chemistry Meets Biology for Health 8

Chairperson: Gilles Guichard

Chemistry Meets Biology for Health

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16:00-17:00 Liffey Hall 1

Supramolecular Chemistry 8

Chairperson: Jamie Lewis

Supramolecular Chemistry

16:00-17:00 Liffey Meeting Room 2

Catalysis

Chairperson: Ulrich Hintermair

Catalysis

16:00-17:00 EcoCem Room

Nanochemistry/Materials 7

Chairperson: Andrea Cornia

Nanochemistry/Materials

16:00-17:00 Wicklow Meeting Room 1

Education, History, Culture Heritage, and Ethics in Chemistry - History of chemistry

Chairperson: Brigitte Van Tiggelen

Education, History, Culture Heritage, and Ethics in Chemistry

16:00-17:00 Wicklow Meeting Room 2

Supramolecular Chemistry 9

Chairperson: Paul Lusby
Supramolecular Chemistry

16:00-17:00 Liffey Meeting Room 3

Physical, Analytical and Computational Chemistry - Computational 6

Chairperson: Adam Turner
Physical, Analytical and Computational Chemistry

16:00-17:00 Wicklow Meeting Room 3

EYCN - Mental Health in Early Career Academia - What Does a Sustainable Career Look and Feel Like?

Chairperson: Marie Désirée Schlemper-Scheidt
EYCN

16:00-17:00 Liffey Meeting Room 1

Education, History, Culture Heritage, and Ethics in Chemistry - Gamification and virtual reality in chemistry education

Chairperson: Juliana Vidal
Education, History, Culture Heritage, and Ethics in Chemistry

16:00-17:00 Wicklow Meeting Room 4

Advances in Synthetic Organic Chemistry 9

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

17:00-17:15 Liffey (A+B)

Comfort break

17:15-18:15 Auditorium

Plenary Lecture 5 - Professor Sir David W. C. MacMillan

Chairperson: Martin Albrecht
Catalysis

18:15-18:45 Liffey (A+B)

Poster Session 2

All flash presentations from Tuesday sessions will be displayed in Poster Session 2.

9th EuChemS Chemistry Congress

Schedule

Wednesday, 10 July, 2024

08:30-09:30 Auditorium

Plenary Lecture 6 - Professor Véronique Gouverneur

Chairperson: Bill Morandi
Advances in Synthetic Organic Chemistry

09:30-10:00 Liffey (A+B)

Tea / Coffee Break with Exhibition and Posters

10:00-12:00 Auditorium

Catalysis - Organometallic Catalysis 1

Chairperson: Emma Gallo
Catalysis

10:00-12:00 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 10

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

10:00-12:00 Wicklow Hall 1

Industry Day - Emerging Trends in Chemical Research and Development

Emerging Trends in Chemical Research and Development

10:00 - 10:10 Opening

10:10 - 10:40 Entering the Cognitive Era: AI's Revolutionary Impact on PharmaChemical Industry and Healthcare

Mark Kelly, AI Ireland

10:40 - 11:10 Innovating for a Greener Future: Development of Biocatalytic Processes for Sustainable API Manufacturing

Kevin Maloney, Executive Director, Head of Process Chemistry, Merck

10:00-12:00 Liffey Hall 2

Chemistry Meets Biology for Health 9

Chairperson: Marina Rubini
Chemistry Meets Biology for Health

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**ROYAL SOCIETY
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10:00-12:00 Liffey Hall 1

Supramolecular Chemistry 10

Chairperson: Sébastien Ulrich
Supramolecular Chemistry

10:00-12:00 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Physical and Analytical 5

Chairperson: Conor Hogan
Physical, Analytical and Computational Chemistry

10:00-11:30 EcoCem Room

Nanochemistry/Materials 8

Chairperson: Wendy Queen
Nanochemistry/Materials

10:00-12:00 Wicklow Meeting Room 1

Education, History, Culture Heritage, and Ethics in Chemistry - Understanding research and research data, inclusive chemistry education

Chairperson: Anca Silvestru
Education, History, Culture Heritage, and Ethics in Chemistry

10:00-12:00 Wicklow Meeting Room 2

Energy, Environment and Sustainability - Circular Plastics

Energy, Environment and Sustainability

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10:00-12:00 Wicklow Meeting Room 3

EYCN - EuChemS Young Chemists' Award Finalists' Presentations - Early-Career Level

Chairperson: Monja Schilling
EYCN

10:00-11:30 Liffey Meeting Room 1

Workshop - Demystifying Scientific Collaborations: Strategies for Effective Partnerships in Research and Outreach

Chairperson: Christina McCoy
EYCN

10:00-11:30 Wicklow Meeting Room 4

Mini-Symposium - Making chemistry greener: The next 25 years

Chairperson: Walter Leitner
Energy, Environment and Sustainability

10:00-12:00 Wicklow Meeting Room 5

Energy, Environment and Sustainability - Biomass Valorisation 1

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ROYAL SOCIETY
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10:15-12:00 Liffey Meeting Room 3

Physical, Analytical and Computational Chemistry - Computational 7

Chairperson: Pavel Hobza
Physical, Analytical and Computational Chemistry

12:00-13:30 Liffey (A+B)

Lunch with Exhibition and Posters

13:30-15:30 Auditorium

Catalysis - Organometallic Catalysis 2

Chairperson: Montserrat Diéguez
Catalysis

13:30-15:30 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 11

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

13:30-15:30 Wicklow Hall 1

Industry Day - Collaborations between Academia and Industry

Collaborations between Academia and Industry

13:30 - 14:00 Case Study: Improving Key Steps Involving Palladium Catalysis in the Synthesis of a API

Professor Pat Guiry, University College Dublin - a project in collaboration with Eli Lilly

14:00 - 14:30 Case Study: Farm Zero C, a project in collaboration with Carbery Farms

Dr Cian White, biOrbic, Trinity College Dublin

14:30 - 15:00 Case Study: Selio Medical

John Neilan, Chief Technology Officer, Selio Medical

13:30-15:30 Liffey Hall 2

Chemistry Meets Biology for Health 10

Chairperson: Bernie Creaven
Chemistry Meets Biology for Health

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**ROYAL SOCIETY
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13:30-15:30 Liffey Hall 1

Supramolecular Chemistry 11

Chairperson: Nathalie Katsonis
Supramolecular Chemistry

13:30-15:30 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Computational 8

Chairperson: Péter G. Szalay
Physical, Analytical and Computational Chemistry

13:30-15:30 EcoCem Room

Nanochemistry/Materials 9

Chairperson: Willi Auwärter
Nanochemistry/Materials

13:30-15:30 Wicklow Meeting Room 1

Education, History, Culture Heritage, and Ethics in Chemistry - Ethics and education in chemistry

Chairperson: Kevin Morgan
Education, History, Culture Heritage, and Ethics in Chemistry

13:30-15:30 Liffey Meeting Room 3

Physical, Analytical and Computational Chemistry - Physical and Analytical 6

Chairperson: Jiri Barek
Physical, Analytical and Computational Chemistry

13:30-15:30 Wicklow Meeting Room 3

EYCN - EuChemS Young Chemists' Award Finalists' Presentations - PhD Level

Chairperson: Thomas Vranken
EYCN

13:30-15:00 Liffey Meeting Room 1

Mini-Symposium - FAIR Data for Chemistry: National Infrastructures, Standards, Tools and Resources

Chairperson: John D. Jolliffe
Education, History, Culture Heritage, and Ethics in Chemistry

13:30-15:00 Wicklow Meeting Room 4

Mini-Symposium - Molecular Quantum Technologies

Chairperson: Joris van Slageren
Nanochemistry/Materials

13:30-15:00 Wicklow Meeting Room 5

Energy, Environment and Sustainability - Biomass Valorisation 2

Chairperson: Konstantinos Triantafyllidis
Energy, Environment and Sustainability

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13:45-15:30 Wicklow Meeting Room 2

Energy, Environment and Sustainability - Pollutant Control and Remediation

Chairperson: Paul Anastas
Energy, Environment and Sustainability

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15:30-16:00 Liffey (A+B)

Tea / Coffee Break with Exhibition and Posters

16:00-17:00 Auditorium

Catalysis - Organometallic Catalysis 3

Chairperson: Rinaldo Poli
Catalysis

16:00-17:00 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 12

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

16:00-17:00 Wicklow Hall 1

Industry Day - Panel Discussion: The Importance and Future of the (Bio)PharmaChemical Industry in Ireland

Panel Discussion: The Importance and Future of the (Bio)PharmaChemical Industry in Ireland
Panellists:

Professor Damien Thompson, SSPC Director

Dr Sinéad Keogh, Director of BioPharmaChem Ireland

Tracey Donnery, Director of Policy & Communications Skillnet Ireland

Dr Tom O'Ceallaigh, Director Research Development Chemistry, MSD Ballydine

16:00-17:00 Liffey Hall 2

Chemistry Meets Biology for Health 11

Chairperson: Oxana Kotova
Chemistry Meets Biology for Health

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**ROYAL SOCIETY
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16:00-17:00 Liffey Hall 1

Supramolecular Chemistry 12

Chairperson: Steve Goldup
Supramolecular Chemistry

16:00-17:00 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Physical and Analytical 7

Chairperson: Peter Dunne
Physical, Analytical and Computational Chemistry

16:00-17:00 EcoCem Room

Nanochemistry/Materials 10

Chairperson: Stefanie Dehnen
Nanochemistry/Materials

16:00-17:00 Wicklow Meeting Room 1

Education, History, Culture Heritage, and Ethics in Chemistry - Irish contributions to science, history of chemistry and education

Chairperson: Annette Lykknes

Education, History, Culture Heritage, and Ethics in Chemistry

16:00-17:00 Wicklow Meeting Room 2

Supramolecular Chemistry 13

Chairperson: Guillaume Vives

Supramolecular Chemistry

16:00-17:00 Liffey Meeting Room 3

Physical, Analytical and Computational Chemistry - Physical and Analytical 8

Chairperson: Leila Moura

Physical, Analytical and Computational Chemistry

16:00-17:00 Wicklow Meeting Room 3

EYCN - Artificial Intelligence in Chemistry

Chairperson: Maximilian Menche

EYCN

16:00-17:00 Liffey Meeting Room 1

Catalysis

Catalysis

16:00-17:00 Wicklow Meeting Room 4

Nanochemistry/Materials 11

Chairperson: Georges Mouchaham

Nanochemistry/Materials

16:00-17:00 Wicklow Meeting Room 5

Energy, Environment and Sustainability - Towards Circular Carbon

Chairperson: Robert Tuba

Energy, Environment and Sustainability

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**ROYAL SOCIETY
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17:00-17:15 Liffey (A+B)

Comfort break

17:15-18:15 Auditorium

Plenary Lecture 7 - Professor Dame Clare P. Grey

Chairperson: Walter Leitner
Energy, Environment and Sustainability

18:15-18:45 Liffey (A+B)

Poster Session 3

**All flash presentations from
Wednesday sessions will be displayed
in Poster Session 3.**

9th EuChemS Chemistry Congress

Schedule

Thursday, 11 July, 2024

08:30-09:30 Auditorium

Plenary Lecture 8 - Professor Odile Eisenstein

Chairperson: Christopher Brett
Physical, Analytical and Computational Chemistry

09:30-10:00 Liffey (A+B)

Tea / Coffee Break with Exhibition and Posters

10:00-12:00 Auditorium

Catalysis - Electrocatalysis 1

Chairperson: Christoph Schotes
Catalysis

10:00-12:00 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 13

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

10:00-12:00 Wicklow Hall 1

Energy, Environment and Sustainability - Photo- and Electrocatalysis

Energy, Environment and Sustainability

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10:00-12:00 Liffey Hall 2

Chemistry Meets Biology for Health 12

Chairperson: Isabel Rozas
Chemistry Meets Biology for Health

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10:00-12:00 Liffey Hall 1

Supramolecular Chemistry 14

Chairperson: Robert Elmes
Supramolecular Chemistry

10:00-12:15 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Physical and Analytical 9

Chairperson: Aoife Gowen
Physical, Analytical and Computational Chemistry

10:00-12:15 EcoCem Room

Nanochemistry/Materials 12

Chairperson: Volker Deringer
Nanochemistry/Materials

10:00-11:45 Wicklow Meeting Room 1

Education, History, Culture Heritage, and Ethics in Chemistry - Contributions from education, history of chemistry and cultural heritage to sustainable development

Chairperson: John D. Jolliffe
Education, History, Culture Heritage, and Ethics in Chemistry

10:00-12:00 Wicklow Meeting Room 2

Energy, Environment and Sustainability - Upgrading of Biomass Waste Streams

Chairperson: Nikolas Thomaidis
Energy, Environment and Sustainability

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10:00-12:00 Liffey Meeting Room 3

Physical, Analytical and Computational Chemistry - Computational 9

Chairperson: Peter Reinhardt
Physical, Analytical and Computational Chemistry

10:00-12:00 Wicklow Meeting Room 3

EYCN - The Diversity of Inclusion & Diversity

Chairperson: Patrick Fritz
EYCN

10:00-11:30 Liffey Meeting Room 1

Mini-Symposium - The Potential of Electrochemistry to Power Drug Discovery (EFMC Session)

Chairperson: Gianluca Sbardella
Chemistry Meets Biology for Health

10:00-12:00 Wicklow Meeting Room 4

Catalysis - Organometallic Catalysis 4

Chairperson: Oscar Pàmies
Catalysis

10:00-11:30 Wicklow Meeting Room 5

Mini-Symposium - Synthesis of Nanocarbons for energy: Photophysical properties and applications in energy

Chairperson: Agustín Molina
Nanochemistry/Materials

12:30-13:00 Liffey (A+B)

Poster Session 4

All flash presentations from Thursday sessions will be displayed in Poster Session 4.

12:30-13:15 Wicklow Meeting Room 3

EYCN - Maximise the Visibility of Your Research - Learning from Skilled Science Journalists and Communicators

Chairperson: Fernando Gomollón-Bel
EYCN

13:15-15:00 Auditorium

Catalysis - Electrocatalysis 2

Chairperson: Martin Albrecht
Catalysis

13:15-15:00 Wicklow Hall 2 (A+B)

Advances in Synthetic Organic Chemistry 14

Chairperson: Bill Morandi, Mariola Tortosa
Advances in Synthetic Organic Chemistry

13:15-15:00 Wicklow Hall 1

Energy, Environment and Sustainability - Biomass Valorisation 3

Energy, Environment and Sustainability

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13:15-15:00 Liffey Hall 2

Chemistry Meets Biology for Health 13

Chairperson: Sylvia Draper

Chemistry Meets Biology for Health

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13:15-15:00 Liffey Hall 1

Supramolecular Chemistry 15

Chairperson: Cristiano Zonta

Supramolecular Chemistry

13:15-15:00 Liffey Meeting Room 2

Physical, Analytical and Computational Chemistry - Physical and Analytical 10

Chairperson: Rob Evans

Physical, Analytical and Computational Chemistry

13:15-15:00 EcoCem Room

Nanochemistry/Materials 13

Chairperson: Matteo Mannini

Nanochemistry/Materials

13:15-15:15 Wicklow Meeting Room 1

Education, History, Culture Heritage, and Ethics in Chemistry - Cultural heritage in chemistry

Education, History, Culture Heritage, and Ethics in Chemistry

13:15-15:15 Wicklow Meeting Room 2

Energy, Environment and Sustainability - Materials for Energy Conversion

Energy, Environment and Sustainability

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**ROYAL SOCIETY
OF CHEMISTRY**

13:15-15:00 Liffey Meeting Room 3

Physical, Analytical and Computational Chemistry - Computational 10

Chairperson: Michael Buehl

Physical, Analytical and Computational Chemistry

13:15-15:00 Wicklow Meeting Room 3

EYCN - Identifying and Applying for Grants - Tips and Tricks for Successful Applications

Chairperson: João Borges

EYCN

13:15-14:45 Liffey Meeting Room 1

Mini-Symposium - Green Chemistry Education for the Achievement of a Sustainable Future

Chairperson: Gillian Collins

Education, History, Culture Heritage, and Ethics in Chemistry

13:15-14:45 Wicklow Meeting Room 5

Mini-Symposium - Molecular electronics for supramolecular photosynthesis: showcasing the inter-European Chemical Society Scientific Legacy.

Chairperson: Marcella Bonchio

Nanochemistry/Materials

15:00-15:30 Liffey (A+B)

Tea / Coffee Break

15:30-16:30 Auditorium

Presentation of August Wilhelm von Hofmann Commemorative Medal to David Leigh

Chairperson: Guido Clever

Supramolecular Chemistry

16:30-17:00 Auditorium

Closing Ceremony