

## Bernard P. Binks

**Name** Bernard Paul Binks, *BSc, PhD, CChem FRSC, FHEA*  
**Position** Professor of Physical Chemistry  
**Address** Department of Chemistry, University of Hull, Hull. HU6 7RX. UK  
**Tel.** +44-(0)1482-465450  
**E-mail** [bernardbinks33@gmail.com](mailto:bernardbinks33@gmail.com)  
**Website** <https://www.hull.ac.uk/staff-directory/bernard-p-binks>

<b>Higher Education</b>	1980-1986	University of Hull
	1983	BSc First Class Honours Degree in Chemistry
	1986	PhD Degree, BP Studentship - <i>Ultralow interfacial tensions and microemulsion formation in oil-water-surfactant systems</i>
<b>Professional Societies</b>	1987	Member of the Royal Society of Chemistry (MRSC) & Chartered Chemist (CChem)
	2000	Fellow of the Royal Society of Chemistry (FRSC)
	2016	Fellow of the Higher Education Academy (FHEA)
<b>Committees</b>	1993-1996	Ordinary Member of the Colloid & Surface Chemistry Group Committee of the Society of Chemical Industry (SCI)
	1994-1997	Ordinary Member of Colloid & Interface Science Group Committee of the Royal Society of Chemistry (RSC)
	1997-2002	Secretary of Colloid & Interface Science Group Committee of RSC
	2014-2016	Award Selection Committee, Faraday Division of the Royal Society of Chemistry
	2016-2018	Awards Nomination Committee, Colloid Division of American Chemical Society
<b>Individual Medals and Honours</b>	2004	Colloid & Interface Science Group Medal of the RSC
	2009	Andrew Main Lecturer Award, University of Alberta, Canada
	2011	European Colloid and Interface Society-Rhodia Prize
	2014	Surfaces and Interfaces Award, Faraday Division of the RSC
	2016	Langmuir Lecturer Award, Division of Colloid and Surface Chemistry of the American Chemical Society (<10% of recipients have been non-US over 40 years)
	2020	Research Excellence Award (outstanding published output), Univ. of Hull
	2021	Awardee of 100 Talent Program from Shanxi Province for 5 yrs.
	2022	Research Excellence Award (outstanding research contribution), Univ. of Hull
	2022	(a) Sir Eric Rideal Award and Lecture, RSC/SCI (b) R&D for Society Award, SCI Yorkshire and the Humber Regional Group
	2023	Overbeek Gold Medal, European Colloid and Interface Society
	2024	Lectureship Award, Div. Colloid and Surface Chemistry, Chemical Society of Japan
<b>Visiting Prof. Invited Prof.</b>	2020-	School of Chemistry and Chemical Engineering, Shanxi University, China
	2003	Lever Fabergé, Unilever, Leeds
<b>Employment History</b>	1987	Royal Society European Exchange Fellow, École Normale Supérieure, Paris
	1988-1991	Research Fellow, School of Chemistry, Univ. of Hull
	1991-1997	Lecturer, Department of Chemistry, Univ. of Hull
	1997-1998	Senior Lecturer, Department of Chemistry, Univ. of Hull
	1998-2002	Reader, Department of Chemistry, Univ. of Hull
	2002-2015	Director of the Surfactant and Colloid Group, Univ. of Hull
	2003-	Professor of Physical Chemistry, Department of Chemistry, Univ. of Hull
<b>Editorial Appointments</b>	2001	Section Editor for <i>Current Opinion in Colloid and Interface Science</i>
	2000-2007	Member of Peer Review College of EPSRC
	2006-2009	Editorial Board Member of <i>Physical Chemistry Chemical Physics</i> (RSC)
	2007	Guest Editor for Themed Issue entitled Colloidal Particles at Liquid Interfaces in <i>Physical Chemistry Chemical Physics</i>

<b><i>Publications</i></b>	<b>Total 396:</b> Including <b>346</b> Journal Articles, <b>3</b> Edited Books, <b>12</b> Review Articles, <b>9</b> Book Chapters, <b>6</b> Conference Proceedings, <b>17</b> Patents
<b><i>h-Index (WOS)</i></b>	<b>89</b> (> 31,000 citations)
<b><i>Conference Lectures</i></b>	<b>223</b> Plenary, Keynote and Invited Lectures
<b><i>Ph.D. Graduations</i></b>	<b>60</b> (former alumni include Professors and research group leaders in industry)

---

### **Employment Record**

#### ***2003-Present: Professor of Physical Chemistry at University of Hull***

Binks' recent research has been key in driving the dramatic growth of inter-disciplinary interest in the properties of solid particles adsorbed at a range of fluid interfaces. Many industrial products contain particles frequently in contact with liquid surfaces, but their mode of action is normally unknown due to the complexity of the formulation. The research by Binks aimed to determine how and when particles act like surfactants in stabilising emulsions and foams and to utilise such particle assembly to design new soft materials like dry water and powdered oil. A strong collaboration with industry has brought new scientific problems in which Binks has carried out the basic underlying science. Other research interests include corrosion inhibition by surfactants, wax crystallisation in oils and permeation of surfactant formulations through skin. This fundamental and applied research has been achieved within his own research group of around 10 researchers.

#### ***2002-2015: Director of Surfactant & Colloid Group at University of Hull***

In 2002, Binks became Director of the Surfactant & Colloid Group. Under his leadership, the Group doubled in size from 15 to 30. His own strategic initiatives for the Group were to (i) expand the Group interests by initiating research in the industrially important area of emulsions and latterly in the field of particles at interfaces, (ii) attract researchers from overseas through his involvement in EU Research Networks, (iii) play a major role in the training of personnel from industry, (iv) develop new contacts with companies leading to research funding and (v) organise international conferences at Hull in order to raise the University's profile. The research interests now include theory and simulation of particles at interfaces, biocolloid science and materials science.

#### ***2003: Sabbatical period at Lever Fabergé, Leeds***

Binks was invited by Unilever to spend 6 months in Leeds. One activity was to deliver a training course on surfactants whilst the other was to initiate new ideas and promote understanding in the area of aerosol formulations for anti-perspirants. He was partly involved in the development and launch of a new product to the market (Lynx/Axe Pulse), retailed online and by the leading supermarkets.

#### ***1991-2003: Staff Member in Department of Chemistry, University of Hull***

Binks was appointed Lecturer in 1991 and promoted to Professor 12 years later. In this time, he made significant contributions in the areas of microemulsions, aqueous foams, antifoam action of oils and particles, the structure of mixed oil-surfactant layers by neutron reflection, the behaviour of primitive semifluorinated alkane surfactants, Ostwald ripening in emulsions and began systematic studies in the area of particle-stabilised emulsions. Funding was gained from research councils, industry and the EU (over £5 M). Binks was the grant holder (PI)/Hull coordinator of three EU Research Training Networks: (i) *Foam stability and wetting transitions*, 1998-2001, (ii) *Amphiphile monolayers on fluid and solid substrates*, 1993-1997 and (iii) *Solubilisation of surfactant solutions*, 1993-1996. Binks served on two national committees of the RSC and SCI for 10 years and was the sole organiser of 5 international scientific conferences each attracting around 200 delegates (later).

#### ***1988-1991: Research Fellow, University of Hull***

An EPSRC-funded grant enabled Binks to work on Langmuir monolayers of insoluble surfactants and their deposition to form Langmuir-Blodgett multilayers on solid substrates. An instrument was built to measure the dynamic contact angle at the air-water-solid interface during deposition which allowed us to understand why and when transfer occurred. In a second grant funded by BP Research, Binks designed and constructed a new instrument capable of measuring the forces between a liquid drop and a planar oil-water interface. It was the first of its kind and enabled him to understand the important factors contributing to the stability of emulsions.

### ***1987: Royal Society European Exchange Fellow, Paris***

Binks was awarded the grant from The Royal Society to join the prestigious physics team of Langevin and Meunier in Paris where his work in connection with enhanced oil recovery was two-fold: **(i)** Determination of the structure of middle-phase microemulsions formed in oil-water-surfactant systems by light and X-ray scattering and **(ii)** first measurements of the bending elastic modulus  $\kappa$  of surfactant monolayers at low tension oil-water interfaces by ellipsometry. Through these, Binks established the link between  $\kappa$  and microemulsion structure, confirming predictions by de Gennes some years earlier.

### ***Collaboration***

Binks has always encouraged national and international collaboration with scientists from many disciplines. Current ones (13) are: South China Univ. of Technology (*3D printing of emulsions*), Jiangnan Univ. (*switchable surfactants*), Shanxi Univ. (*catalysis in Pickering emulsions*), Northwestern Polytechnical Univ. (*ultrasound on drops*), Univ. of Hong Kong (*electric field effects*), Southwest Jiaotong Univ. (*interfacial biocatalysis*), Henan Normal Univ. (*light switching of emulsions*), Jinan Univ. (*foaming of fats*), Nanyang Technological Univ. (*pollen particles*), Ariel Univ. (*liquid marbles*), Univ. of Calgary (*catalysis in emulsions*), Univ. of Liverpool (*liquid metals*) and Univ. of Luxembourg (*liquid crystal liquid marbles*).

### ***Recent Invited Lectures at Conferences, Companies or Universities (2015-2023 only)***

<b>Date</b>	<b>Location</b>	<b>Lecture</b>	<b>Organiser</b>
Sept. 2023	Naples	37 <sup>th</sup> European Colloid and Interface Society Conference <sup>1</sup>	ECIS
June 2022	London	Sir Eric Rideal Symposium: Particles at a range of fluid interfaces <sup>2</sup>	SCI/RSC
June 2021	Virtual	Designed assembly of colloids at interfaces	IOP/RSC/SCI
Nov. 2020	Virtual	Company Interface Science Seminar	Dow (USA)
Sept. 2019	Stuttgart	49 <sup>th</sup> Meeting of German Colloid Society	Kolloid-Gesellschaft
Mar. 2019	Brussels	2 <sup>nd</sup> H2020 Network Review	EU Coordinator
Dec. 2018	London	McBain Meeting	RSC/SCI
Nov. 2018	Princeton University	Seminar	Unilever Research USA
June 2018	Univ. of Liverpool	Future of Formulation Workshop	Univ. of Liverpool
Dec. 2017	Paris	Colloids & Complex Fluids for Energies	Institut. Francais du Petrole
Nov. 2017	London	Commercialisation of Pickering emulsions	RSC/SCI
Aug. 2017	Washington DC	254 <sup>th</sup> ACS National Meeting	ACS
July 2017	Madrid	VII Iberian Colloids & Interfaces Meeting	Spanish Colloid Society
Sept. 2016	Leeds	Particles at Interfaces	RSC/SCI
Aug. 2016	Philadelphia	252 <sup>nd</sup> ACS National Meeting <sup>3</sup>	ACS
July 2016	Glasgow	Faraday Discussion	RSC

May 2016	Goole	Seminar	Croda
Jan. 2016	Gothenburg	Seminar	AkzoNobel
Jan. 2015	Amsterdam	5 <sup>th</sup> International Colloids Conference <sup>4</sup>	Elsevier

<sup>1</sup> Overbeek Gold Medal Award Lecture; <sup>2</sup> Sir Eric Rideal Award Lecture; <sup>3</sup> Langmuir Award Lecture; <sup>4</sup> RSC Surfaces and Interfaces Award Lecture

### **Research Conference Organisation**

- Scientific Committee for 37<sup>th</sup> European Colloid and Interface Society Conference, Naples, 2023
- Scientific Committee for 34<sup>th</sup> European Colloid and Interface Society Conference, Athens, 2021
- Scientific Advisory Board for International Conference of Chemical Society of Japan, Okinawa, 2019
- Scientific Committee for SURCON-OCCA Centenary Conference, Leeds, 2018
- Scientific Committee for 6<sup>th</sup> International Conference for Colloids & Interfaces, Berlin, 2016
- National Scientific Committee for European Technical Coatings Congress, Birmingham, 2016
- International Scientific Committee for 11<sup>th</sup> EUFOAM Conference, Dublin, 2016
- International Advisory Board for 2<sup>nd</sup> International Soft Matter conference, Granada, 2010
- Organising Committee International Symposium on Food Rheology & Structure, Zurich, 2009
- Session Organiser for 17<sup>th</sup> International Symposium on Surfactants in Solution, Berlin, 2008
- International Advisory Board for Formula V conference, Potsdam, 2007
- Organising Committee for Emulsions and Foams conference, RSC, Manchester, 2005
- Chair and Organiser of Controlled Assembly of Materials conference, SCI, London, 2001
- Chair and Organiser of Wetting international conference, RSC, Hull, 1999
- Chair and Organiser of Emulsions international conference, RSC, Hull, 1997
- Chair and Organiser of Surfactant Monolayers, Micelles & Solubilisation conference, RSC, London, 1995

### **Consultancy**

Binks has been a Consultant to > 35 companies in the food, pharmaceutical, agrochemical, home/personal care, cosmetics and oilfield chemicals sectors. 17 patents were filed which have yielded a reasonable level of commercial success.

### **Expert Scientific Witness**

In 2019 Binks was invited by American lawyers as an expert scientific witness in a patent litigation case relating to a foamed emulsion skin product on the market. In 2023 Binks was invited as an expert scientific witness in a patent litigation case relating to pharmaceutical nanoemulsions.

### **Award to Research Group**

In 2011, Binks' group received an award from Nalco Energy Services, USA for its research leading to the development of the company's "Clean n Cor®" Technology, enabling cleaning and corrosion protection of oilfield pipelines and is very profitable. Since 2008, the technology has been Nalco's fastest growing new product.

### **Athena SWAN Award**

In 2016, the Department of Chemistry received a Bronze Athena SWAN Award. As Chair of the Self Assessment Team, Binks put in place many new initiatives including the Women in Chemistry Network, Diversity and Equality Training and the Women in Science Symposium. He also co-wrote the successful Bronze application for the School of Mathematics and Physical Sciences in 2018.