

## Services – research and development

Details of research and development work for clients is confidential. We have helped with product development in the timber industry and conducted technology surveys for clients. Expertise in timber technology, composites, materials science, waste water treatment, coatings.

Dr Callum Hill (MD and CEO of JCH Industrial Ecology Ltd) has been active in research since 1977. He graduated with a First Class Honours Degree in Chemistry from the University of Bristol in 1977 and obtained a PhD in gas sensor technology in 1985.

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RESEARCHGATE: <https://www.researchgate.net/profile/Callum-Hill-4>

GOOGLE SCHOLAR: <https://scholar.google.com/citations?user=RGWGzIUAAA&hl=en>

### Career history

- **June 2013-present:** Consultant at the Norwegian Institute for Bioeconomy Research. Writing research proposal, papers, supervising students, providing research support when requested.
- **January 2012-present:** Senior Consultant for Renewables, evaluating environmental impacts conducting life cycle assessments, writing environmental product declarations.
- **May 2010-present:** Director and owner of JCH Industrial Ecology Ltd. A consultancy providing advice on the utilisation of sustainable and renewable materials, conducting life cycle assessments, environmental product declarations. Technology surveys and training courses for clients.
- **April 2017-March 2021:** Global Expert - InnoRenew Centre of Excellence, Koper, Slovenia. Providing support for research and for proposals.
- **March 2014-March 2017:** Senior Visiting Research Fellow – Department of Architecture and Civil Engineering, University of Bath.
- **October 2007-July 2013:** Edinburgh Research Partnership Professor of Materials Science and Director of the Centre for Wood Science and Technology in the Forest Products Research Institute, Edinburgh Napier University. Supervising staff, running the centre, conducting research.
- **October 2001-September 2007:** Senior Lecturer in Renewable Materials in the School of the Environment and Natural Resources, University of Wales Bangor. Research, teaching and administrative duties.
- **October 1994-September 2001:** Lecturer in Wood Science in the School of Agricultural and Forest Sciences, University of Wales Bangor. Research, teaching and administrative duties.
- **October 1988-September 1994:** Post Doctoral Research Associate in University of Wales Bangor (Department of Chemistry) investigating the non-linear optical properties of organometallic compounds.
- **July 1985- September 1988:** Post Doctoral Research Associate at University of Bristol (Department of Chemistry) studying electrostatic interactions in non-aqueous colloidal dispersions.
- **June 1981-June 1985:** Research Assistant at University of West of England (Department of Science), studying the electronic and spectroscopic properties of thin films of organic macrocyclic compounds, for potential use as gas sensors. Awarded a PhD for work in this area.
- **July 1979-June 1981:** Experimental Officer at the University of Bath (School of Materials Science) investigating the natural degradation of polymers.
- **October 1977-June 1979:** Technician at Bristol Royal Infirmary (Department of Surgery), working on a project studying the mobilisation of lipids in the blood stream following total hip prosthesis operations.

## Publications

- 8 book chapters
- 2 textbooks
- 220 research papers

## Patents

- Improvements in Gas Sensors. C.L. Honeybourne, R.J. Ewen, C.A.S. Hill, N.A. Davies. British Patent Application 02358 (1986).
- Heterocyclic Semiconductor Gas Sensors. Colin Lucas Honeybourne, Richard John Ewen, Callum Aidan Stephen Hill, Nicolas Arthur Davies. UK Patent Application GB2186087 (1987).
- Optical Switches. C.S. Winter, S.N. Oliver, J.D. Rush, A.E. Underhill, C.A.S. Hill. European Patent Application 919035853.9, (1991).
- Optical Switches. C.S. Winter, S.N. Oliver, J.D. Rush, A.E. Underhill, C.A.S. Hill. European Patent EP0514438 (1992).
- Optical Switches. C. S. Winter, S. N. Oliver, J. D. Rush, A. E. Underhill, C. A. S. Hill. International Patent WO91/12555 (1991).
- Optical Switches. C. S. Winter, S. N. Oliver, J. D. Rush, A. E. Underhill, C. A. S. Hill. United States Patent 5445767 (1995).
- Process for the manufacture of cellulose-based fibres and the fibres thus obtained. Philip Turner, Zurine Hernandez, Callum Hill. WO/2010/043889 (2010)

## Research grants

- The use of fluorescent compounds to study the topochemical properties of modified wood. The Nuffield Foundation
- Natural resins as a potential wood protecting agent. European commission, contract number FAIR CT95-0089
- An investigation of the kinetics of the chemical modification of wood. A fractals approach. EPSRC, contract number GR/L39596
- Process development and technological evaluation of final products based on new methods for chemical modification of solid wood (CHEMOWOOD). European commission, contract number FAIR PL96-3187
- The determination of the pore space geometry of wood. EPSRC (Joint Research Equipment Initiative), contract number GR/M91709
- Thematic network on wood modification. European Commission, contract number GIRT-CT-2000-05002
- The Provision of a Training Consortium in Forest Products for Wales. ELWa (KEF strand 2), contract number HE CONS 001
- SusCompNet the Sustainable Composites Network. EPSRC, Sustainable Technologies Initiative, contract number GR/R79104/01
- All Wales Training consortium in Forestry and Forest Products (Initial Phase). ELWa (KEF strand 2), contract number HE 06 CONS 1001
- Novel low environmental impact polymer matrix composites (NOVCOMPS). Engineering and Physical Sciences Research Council (LINK), contract number GR/R88748/01
- Support for the development of work programmes on timber, in the European 6th Framework Programme. Engineering and Physical Sciences Research Council, contract number GR/S22318/01
- Sustainable wood preservation. EPSRC (Sustainable Technologies Initiative), contract number GR/R82388/01
- Increasing the durability, value and performance of European timbers by thermal treatment with reactive vegetable oils. (ECOTAN) QLK5-CT-2002-72467. European Commission (CRAFT)
- Utilising timber residues as a source of process chemicals (SILVICHEM). EPSRC, contract number GR/S42620/01
- The study of hemicellulose gels. SAPPI
- The stabilisation of wood to exterior weathering. ICI (Now Akzo Nobel)
- Literature review on potential wood modification technologies. UPM-Kymmene

- Research project investigating new wood modification technologies. UPM-Kymmene
- Travel grant to visit CSIR textiles Port Elizabeth South Africa. Carnegie Trust.
- Travel grant to establish a UK South Africa research consortium in biocomposite materials. Royal Society
- International research project grant with CSIR Port Elizabeth South Africa. Royal Society
- Travel grant for visiting researcher from Romania to work on historic timber. Royal Society of Edinburgh
- Investigations of non-destructive methods to determine the degradation of timber. Historic Scotland
- ISOBIO - Development and Demonstration of Highly Insulating, Construction Materials from Bio-derived Aggregates. EU Project Grant No. 636835. (NIBIO)
- DACOMAT – Damage Controlled Composite Materials. EU Project Grant No. 761072.