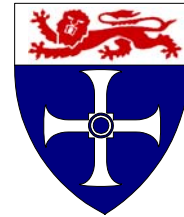
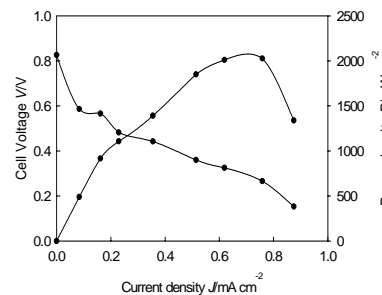
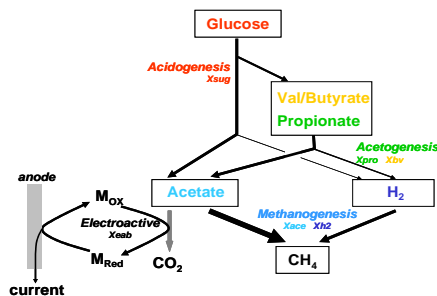


Newcastle University Microbial Fuel Cell Research group (NEWMFC)



Professor Keith Scott School of Chemical Engineering and Advanced Materials



The Microbial Fuel Cell research group operates between the Schools of Chemical Engineering and Advanced Materials and Civil Engineering and Geosciences combining unique expertise in fuel cell science and engineering with microbial ecology and environmental engineering.

The research focuses on developing microbiological systems that develop renewable resources while mitigating environmental pollution. The researchers combine engineering with the latest developments in molecular microbial ecology, ecological theory and biofilm modelling. The groups work is informed by the need to reduce the energy used for wastewater treatment; recovering energy from the wastewater itself, as part of the wastewater treatment process.

A focus for MFC research is understanding the interactions between the anode biofilm and anode electrochemistry and to establish scientific fundamentals, through modeling and experimental studies that steer the engineering of efficient MFCs. In this context we focus on integrating the anode, cathode and membrane to design MFC systems that use bacteria as the catalyst at the anode to intensify waste treatment and also generate useful electrical energy.

An additional focus is to explore biological fuel cells that can utilize glucose for body implantable power sources

The group is a collaboration between Professor's Ian Head; Keith Scott and Tom Curtis; Dr Eileen Yu with a team of 6 PhD students; 3 postdoctoral fellows and 1 visiting research fellow. In addition we collaborate internationally with Bruce Logan at Penn State, Cristian Picioreanu and Mark van Loosdrecht at the Technical University of Delft and groups in Universidad Polit cnica de Cartagena SPAIN (Prof. Carlos God nez) and University of Bucarest; Romania (Prof. I Stamatina), through an EU Marie Curie ToK programme in Biological and Microbial Fuel Cells.

Selected Publications

HaoYu E, Cheng S, Scott K, Logan B. Microbial fuel cell performance with non-Pt cathode catalysts. J. POWER SOURCES 171 (2): 275-281 SEP 27 2007

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Picioareanu C, Head IM, Katuri KP, van Loosdrecht MCM, Scott K. A computational model for biofilm-based microbial fuel cells. WATER RESEARCH 41 (13): 2921-2940 JUL 2007

Morozan A, Stamatina L, Nastase F, Dumitru A, Vulpe S; Stamatina I; Scott K. The biocompatibility microorganisms-carbon nanostructures for applications in microbial fuel cells. PHYSICA STATUS SOLIDI A-APPLICATIONS AND MATERIALS SCIENCE 204 (6): 1797-1803 JUN 2007

Morozan A, Stamatina I, Stamatina L, Dumitru A; Scott K. Carbon electrodes for microbial fuel cells. J. OPTOELECTRONICS AND ADVANCED MATERIALS 9 (1): 221-224 JAN 2007

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Logan BE, Murano C, Scott K, Gray ND; Head IM. Electricity generation from cysteine in a microbial fuel cell. WATER RESEARCH 39 (5): 942-952 MAR 2005

