Prof. William Paul GILLIN

Employment:	1996-Present	School of Physics and Astronomy, QMUL.
	1986-1996	Research Fellow in the EPSRC Ion Beam Facility for Microelectronics at the University of Surrey.
	2011-Present	Director of Sino-British Materials Research Institute at Sichuan University.
	2014-Present	Director of Materials Research Institute, QMUL.
Education:	1991	University of Surrey, PhD(Part time) Dept. of Electronic and Electrical Engineering, "*Interdiffusion in InGaAs/GaAs strained quantum wells*"
	1986	Loughborough University of Technology, Hons. Degree in Electronic Engineering and Physics

Research Funding

Recent funding

- *Organic Integrated Photonics*, W.P. Gillin, PoC fund, **£50K**
- *Overseas Travel Grant*, W.P. Gillin, EPSRC, **£89K**
- *Global Engagement-China*, J. Kilburn, W.P. Gillin, L. Cuthbert, X. Chen, S. Uhlig, A. Cavallaro, E. Welch, EPSRC, **£500K**
- *A low cost replacement for indium tin oxide for smartphone displays*, W.P. Gillin and G. Adamopoulos, EPSRC KTA, **£91K**.
- *Next Generation Hybrid Interfaces for Spintronic Applications (HINTS)*, A.J. Drew and W.P. Gillin, EU, (QMUL £301K), **€3.87M**.

International Standing

- High End Foreign Expert of the Chinese Government
- Distinguished Visiting Professor, Sichuan University
- Senior Visiting Researcher, Key State Laboratory for ASIC Design, Fudan University

Recent invited conferences:

2009 SPINOS2009 conference, Salt Lake City, USA.
2010 ICFPFM conference, Korea University, Korea.
2010 SPINOS 2010 conference, Amsterdam, Netherlands.
2012 2nd International Workshop on Organic Spintronics, Tainan, Taiwan.
2013 Deutsche Physikalische Gesellschaft Annual Meeting, Regensburg, Germany
2014 Gordon research Conference, "Hybrid Electronic and Photonic Materials and Phenomena", Hong Kong
2014 ICEL-10, Köln, Germany

Conference organisation

- International Advisory Committee for the "Photonics in the Space Environment" conference series.
- International Advisory Committee for Spins in organic semiconductors (SPINOS) conference series.
- Programme Committee, SPINOS 2010.
- Conference Chair, SPINOS 2012

Research Highlights

- Initiated QMUL research in to organic spintronics and magnetoresistance. Proposed triplet polaron interaction model of organic magnetoresistance and designed experiments to prove each key idea independently. This work has provided new

techniques for understanding spin dependent processes in working OLEDs which may provide a new understanding of the operation of these devices. Proposed band alignment model to explain control of spin extraction in organic spinvalves. This work allows for the first time the control of the sign of spin extraction from an organic layer which will allow for the engineering of conceptually new devices. 12 PhD students (7 completed)

- Produced the world's first Er based organic materials for infrared emission and demonstrated the first OLED to emit at 1.5μm. Have recently demonstrated optical gain in an organic system when pumped with low power pump sources. 7 PhD students (4 completed) and 5 post-doctoral research fellows.
- Led a 10 year research programme on diffusion in III-V semiconductor heterostructures. 5 PhD students (all completed) and 2 post-doctoral research fellows.
- ~130 papers in major international journals

Recent publications

1)"1.5μm optical gain from a waveguide fabricated from an efficient, sensitized organic lanthanide system", H. Ye, Z. Li, Y. Peng, Y. Zheng, A. Sapelkin, G. Adamopoulos, I. Hernandez, P.B. Wyatt, W.P. Gillin, *Nature Materials*, 13, 382, (2014).

2)"Engineering spin propagation across a hybrid organic-inorganic interface with polar molecules", L. Schulz, L. Nuccio, M. Willis, P. Desai, P. Shakya, T. Kreouzis, V.K. Malik, C. Bernhard, F.L. Pratt, N.A. Morley, A. Suter, G. J. Nieuwenhuys, T. Prokscha, E. Morenzoni, W.P. Gillin and A.J. Drew, *Nature Materials*, 10, 39, (2011).

3) "Direct measurement of the electronic spin diffusion length in a fully functional organic spin valve by low-energy muon spin rotation", A.J. Drew, J. Hoppler, L. Schulz, F.L. Pratt, P. Desai, P. Shakya, T. Kreouzis, W.P. Gillin, A. Suter, N.A. Morley, V.K. Malik, A. Dubroka, K.W. Kim, H. Bouyanfif, F. Bourqui, C. Bernhard, R. Scheuermann, G.J. Nieuwenhuys, T. Prokscha, E. Morenzoni, *Nature Materials*, 8, 109, (2009).

4) "Magnetoresistance and efficiency measurements of Alq3 based OLEDs", P. Desai, P. Shakya, T.Kreouzis, W.P. Gillin, N.A. Morley and M.R.J. Gibbs, *Phys. Rev. B*, Vol. 75, 094423. (2007).

5)"Elucidating the role of hyperfine interactions on organic magnetoresistance using deuterated aluminium tris(8-hydroxyquinoline)", N.J. Rolfe, M. Heeney, P.B. Wyatt, A.J. Drew, T. Kreouzis, W.P. Gillin, *Physical Review B*, 80, 241201, (2009).

6) "The effect of excited states and applied magnetic fields on the measured hole mobility in an organic semiconductor.", J.Y.Song, N.Stingelin, A.J. Drew, W.P.Gillin and T.Kreouzis, *Physical Review B*, 82, 085205, (2010).

7) "Determining the influence of excited states on current transport in organic light emitting diodes using magnetic field perturbation.", W.P. Gillin, Sijie Zhang, N.J. Rolfe, P. Desai, P. Shakya, A.J. Drew and T. Kreouzis, *Phys. Rev. B*, 82, 195208, (2010).

8) "Spray-Deposited Li-Doped ZnO Transistors with Electron Mobility Exceeding 50 cm(2)/Vs", G. Adamopoulos, A. Bashir, S. Thomas, W.P. Gillin, S. Georgakopoulos, M. Shkunov, M.A. Baklar, N. Stingelin, R.C. Maher, L.F. Cohen, D.D.C. Bradley and TD. Anthopoulos, *Advanced Materials*, 22(42), 4764, (2010).

9) "Efficient white light emission by upconversion in Yb3+, Er3+ and Tm3+ doped Y2BaZnO5", I. Etchart, M. Berarad, M. Laroche, A. Huignard, I. Hernandez, W.P. Gillin, R.J. Curry and A.K. Cheetham, *Chem. Comm*., 47, 6263, (2011).

10) "Importance of intramolecular electron spin relaxation in small molecule semiconductors", L. Schulz, M. Willis, L. Nuccio, P. Shusharov, S. Fratini, F. L. Pratt, W. P. Gillin, T. Kreouzis, M. Heeney, N. Stingelin, C. A. Stafford, D. J. Beesley, C. Bernhard, J. E. Anthony, I. McKenzie, J. S. Lord, and A. J. Drew, *Phys. Rev. B* 84, 085209 (2011).