UNIVERSITY of GLASGOW

PhD in Device Modelling

DEVICE MODELLING GROUP

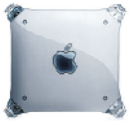
What We Do…

Modelling and Simulation of modern semiconductor devices and circuits drastically reduces development costs and time to market of new technologies. In the Glasgow Device Modelling Group we create simulation tools at the cutting edge, and run them on some of the most powerful computers in Scotland. By using finite element 2D and 3D solvers, and Monte Carlo methods, we support and lead device technology and design programmes both in academia and in industry.

Our supporters include: EPSRC, NASA, DARPA and companies such as Motorola, Siemens, IBM, Mitel, Avant! and Silvaco. International academic collaborators include the Rush Medical Center and National Center for Computational Electronics.

Avant!

RUSH Rush-Presbyterian-St. Luke's Medical Center



DARPA

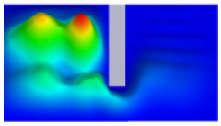
IBM

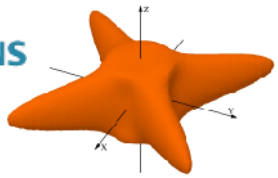
NASA

MOTOROLA

MITEL

SIEMENS





What *You* Could be Doing…

(Specific projects will be tailored to individual capabilities and interests)

Simulation of Ultrafast Compound FETs

The RF Performance of FETs at frequencies above 100Ghz is determined by non-equilibrium transport and device parasitics. We use, and continuously develop, one of the most advanced finite element Monte-Carlo semiconductor device simulators for the realistic and predictive modelling of modern MESFETs and HEMTs.

'Atomistic' Device Simulation

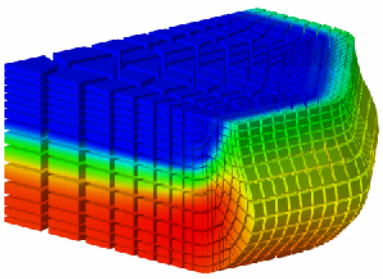
As semiconductors are scaled to sub 0.1µm dimensions, the discrete nature of individual impurities begins to affect device performance. We work with NASA to develop simulation techniques for ultra-small devices, and with Rush Medical Center to apply atomistic methods to the simulation of ion transport in biological membranes.

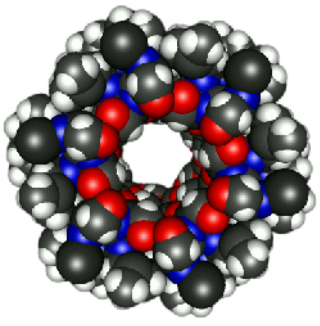
SiGe

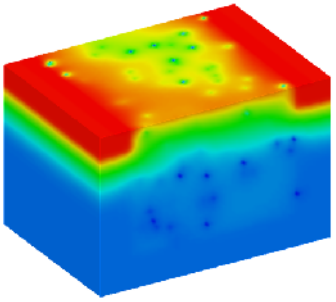
SiGe has recently been shown to improve performance of conventional Si MOSFETs which form the cornerstone of the electronics market. We provide modelling and design research for a national consortium of universities and international industry investigating this technology. The work is supported by a substantial EPSRC grant.

Parallel Device Simulation

One of our strengths is our ability to handle large scale simulations using advanced parallel processing techniques and an array of hardware unequalled in the UK. We develop novel, efficient parallel simulation methods that allow 3D and atomistic simulations to be used for practical device modelling and analysis.







Contact: Prof. A. Asenov (A.Asenov@elec.gla.ac.uk), Prof. J.R. Barker (J.Barker@elec.gla.ac.uk), Dr. S. Roy (S.Roy@elec.gla.ac.uk)
Device Modelling Group, Dept. of E&EE, University of Glasgow, Glasgow. G12 8LT.
fax : +44 141 330 4907 website : http://www.elec.gla.ac.uk/groups/dev_mod

Note that financial support is available to UK nationals (both fees and maintenance), EU nationals (fees only, with additional support in selected cases), and applications for support to the ORS may be made by overseas students. Contact us for further details.