5. Cancellations – No payment can be refunded to those cancelling after Friday 20 May 2005. For those cancelling before the Friday 20 May 2005 a nominal fee of £10.00 will be charged.

6. Confirmation of Booking – You should receive confirmation of your booking within ten days.

Further Information

For further information about the conference please contact Jasmina Bolfek-Radovani, The Institute of Physics, 76 Portland Place, London W1B 1NT. Email: **jasmina.bolfek-radovani@iop.org**
Regular updates about the conference will be publicised on the conference web site at
http://conferences.iop.org/MDD/

Scientific Organisers
Dr John Clark, Fine R and D Ltd, E-mail **john.clark@finerandd.com**.
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Mechanics for Medical Device Development

Wednesday 25 May 2005
Institute of Physics, London, UK

Jointly organised by the Polymer Physics Group and the Stress and Vibration Group of the Institute of Physics

Background

Governments in developed countries face two pressures that are difficult to reconcile: reducing taxation and improving healthcare. In the last 13 years European growth per capita health spending has outstripped growth in per-capita GDP. The ageing population is expected to become more dependent on medical intervention. Subsequently the age of the population increases further because of the intervention. Spending on healthcare consumables and equipment is estimated to be around $60 per annum and is expected to grow by 10% each year. The need to improve the cost effectiveness of devices that are used for implants, angioplasty and drug delivery is clear. However, these devices undergo considerable mechanical load, must be made from materials that are compatible and must in some case be small enough so that they can be placed using minimal invasion. The combination of these factors produces a huge challenge to the designer. The devices are often made from non-linear materials, which are anisotropic and behave in a super-elastic manner. Accurate modelling of the behaviour requires a detailed material characterisation. Legislation requires that the products undergo extensive testing, inevitably resulting in development funds being allocated to products that never reach market. The seminar focuses on improvements in the modelling and testing of medical devices and focuses on novel approaches to device evaluation. The seminar will appeal to industrial and academic practitioners of applied mechanics and to those employed in medical device research and development.

Further contributions are invited from researchers on work in progress, in the form of posters that will be displayed at the meeting with an opportunity to provide a short presentation of the work. This will be complemented by three invited presentations and full paper sessions.

Poster contributions

These will be in the form of A1 size posters detailing the aim and objectives of the current work with a summary of the findings to-date. To submit a poster please send a short outline by email to Janice@ship.soton.ac.uk by 10th May 2005.

Institute *of* **Physics**

Provisonal Programme

10:00 – 10:30	**Registration, Coffee and opening remarks**
10.30 – 11:00	**Invited speaker:** Mechanical integrity of ultra-high molecular weight polyethylene for joint prostheses *J. J Wu (University of Durham)*
11:00 – 12:00	**Session 1:**
11:00 – 11:20	Investigating the angle of insertion of a conservative hip replacement *A Page, S P Ahir. M J Coathup, G W Blunn (University College London)*
11:20 - 11:40	Getting Medical Devices to Market Faster *J.D. Clark and J.M.Fine (Fine R and D)*
11:40 - 12:00	Finite element and photoelastic analysis of a new conservative hip prosthesis *S. P. Ahir, S. Sturridge, J. Hua, J. Witt P. Nielson, R. Bigsby and G.W. Blunn (University College London)*
12:00 - 13:00	**Poster presentations**
13:00 – 14:00	**Lunch and viewing of posters**
14:00 – 14:30	**Invited speaker:** Application of computational techniques during the development of medical devices *D. Hodson (AstraZeneca)*
14:30 – 15:30	**Session 2:**
14:30 – 14:50	Magneto-mechanical bone growth stimulation by actuation of bonded ferromagnetic fibre arrays *A.E. Markaki and T.W. Clyne (University of Cambridge)*
14:50-15:10	The application of thermoelastic stress analysis to angioplasty balloons *J. Eaton-Evans, J.M. Dulieu-Barton, E. Little and I. Brown (University of Limerick, University of Southampton)*
15:10 – 15:30	**Diamond-like carbon- a versatile biocompatible coating** J. Franks (Brunel University)
15:30 – 15:45	**Refreshments**
15:45 – 16:15	**Invited speaker:** SAFE-CABG- A case study of the use of Mechanical Engineering in Medical Device Development *A. Anson, S. Natarajan (Lombard Medical Plc)*
16:15 - 16:45	**Invited speaker:** Aneurysm wall stress analysis can predict the success of endovascular repair *A. Chaudhuri (University College London Hospitals)*
16:45 – 17:00	Plenary discussion and close

Registration

Registration Deadline – 16 May 2005
Cancellation Deadline – 20 May 2005

1. Venue – the conference will be held at Institute of Physics, London. Maps will be sent to all registered participants.

2. Conference Fees – Participants are strongly advised to register before the registration deadline of 16 May 2005. the fees for the conference include refreshments and lunches, conference material, basic costs and administration charges. The registration fees are as follows:

Member Fee:*	£70
Concessionary Member/Retired Member**	£20
Non-member Fee: ***	£90

* *Members of the Institute of Physics*
The member rate is available to:
* All members of the Institute of Physics including those whose application is pending
* Staff at Institute Affiliated Plus Schools
* Members of Co-Sponsoring Institute and Societies
* Members of other Physics societies which have a Companion Society or other collaboration agreement with the Institute of Physics
* Members of the Business Partners Network

** *Concessionary Rate - Institute Members*
The concessionary rate is available to student members, those on career breaks or on low income and retired members.

*** *Non-Members*
Registrants paying this fee will automatically become Affiliates of the Institute of Physics for 12 months (this offer does include Physics World). As an affiliate you will be entitled to attend all conferences at the member rate for the year and join one technical or professional group at no charge.

Membership of the Institute of Physics is open to all who have an interest in physics, for further information please **http://about.iop.org/IOP/Benefits** or contact membership@iop.org.

3. Value added Tax – Charges shown in this document are exempt from VAT unless otherwise indicated.

4. Payment of Fees – All payments due must accompany the registration form, or evidence must be given that payment has been initiated by one of the methods listed below. Methods of payment are:

(a) Cheque - made payable to the Institute of Physics in (£'s) Pounds Sterling

(b) By bank transfer direct to the Institute of Physics bank, Lloyds TSB Bank plc; Knightsbridge, 79 Brompton Road, London SW3 (Sort Code 30-94-81, Account No.0253575). Please quote the name of the applicant and the conference code number 226 (Please supply copy instruction).

(c) By Access/Master/AMEX or Barclay/Visa Credit Card (please complete the relevant section on the registration form). Applications received without payment or details of how payment will be made (a,b,c above) will not be accepted.