

REGISTRATION FORM

“Terahertz Spectroscopy – State of the Art and Future Perspectives”

To register for this meeting, please complete and return the form below, together with the appropriate fee to:

**Brian Woodget, 5 Meadow Close, Datchworth, Herts, SG3 6TD.
[bwoodget@AOL.com]**

Registration fees are: **RSC/MSG members £75, non-members £105, student/retired members and unwaged £35.**

Please make cheques payable to ‘RSC/AD East Anglia Region Trust’.

To pay by BACS please contact Brian Woodget for payment details.

Delegate name:.....

Affiliation:.....

Address for
correspondence:.....
.....

.....

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Tel:.....Fax:.....

E-mail:.....

Cheque enclosed for £..... payable to **The RSC/AD East Anglia Region Trust.**

I do/do not have any special dietary requirements – please specify if necessary

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Chemical Sciences

Analytical Division, Molecular
Spectroscopy Group & the East Anglia
Region

A one day meeting entitled:

**“Terahertz Spectroscopy – State of
the Art and Future Perspectives”**

to be held on:

28 October 2009

**at Gonville & Caius College, Trinity
Street, Cambridge,
CB2 1TA**

PROGRAMME

- 10.00 - 10.30 Registration and coffee
- 10.30 - 10.35 Welcome by John Chalmers and Axel Zeitler
- 10.35 - 11.00 **“Introduction to terahertz spectroscopy”**
Axel Zeitler (Department of Chemical Engineering, University of Cambridge)
- 11.00 - 11.30 **“Understanding the vibrational modes at terahertz frequencies”**
Graeme Day (Department of Chemistry, University of Cambridge)
- 11.30 - 12.00 **“Terahertz spectroscopic imaging”**
Yaochun Shen (Department of Electrical Engineering, University of Liverpool)
- 12.00 - 12.30 **“Recent developments in terahertz spectroscopy instrumentation”**
Philip Taday (TeraView Ltd., Cambridge)
- 12.30 - 13.30 Lunch
- 13.30 - 14.00 **“Terahertz spectroscopy in the life sciences”**
Martyn Chamberlain (Department of Physics, University of Durham)
- 14.00 - 14.30 **“Materials characterisation using terahertz spectroscopy”**
Edward Parrott (Department of Chemical Engineering, University of Cambridge)
- 14.30 - 15.00 **“Polarisation sensitive and pump probe terahertz spectroscopy”**
Michael Johnston (Clarendon Laboratory, University of Oxford)
- 15.00 - 15.30 Tea break
- 15.30 - 16.00 **“Applications of terahertz spectroscopy in the pharmaceutical industry”**
Mike Claybourn (AstraZeneca, Macclesfield)
- 16.00 - 16.30 **“Terahertz spectroscopy of combustion processes”**
Mark Stringer (School of Electronic and Electrical Engineering, University of Leeds)

Terahertz spectroscopy is an exciting field of vibrational spectroscopy which has an excellent potential for the physico-chemical characterisation of materials but it is, as yet, largely under-explored. Recent developments in semiconductor physics have made it possible to provide light at terahertz frequencies (a frequency of 1 THz equals a wavelength of 0.3 mm or a wavenumber of 33 cm^{-1}) in a relatively simple way. Light located in this range of the electromagnetic spectrum was very difficult to generate previously. It has unique properties in that it easily penetrates through a number of materials, such as polymers, which are opaque at visible frequencies. As well as being a non-destructive probe of materials, terahertz radiation has the important property that it interacts with vibrational modes that extend across large domains of a crystal lattice. This makes terahertz spectroscopy unique: even though it is possible to excite molecules using a variety of energies it is only through the careful selection of the low energy in the terahertz range that it is possible to selectively excite crystal lattice vibrations and study in a unique way the presence and nature of interactions between molecules. The broad range of applications for terahertz spectroscopy is rounded off by its ability to study hydrogen bonding interactions in liquids – and hence opening a whole field of applications in the life sciences – while in gases rotational transitions can be investigated in detail.

This meeting brings together the leading UK researchers in the community to give an introduction into the technology, its applications, the interpretation of the experimental data and an outlook into the future of this important new field of spectroscopy.

Note: alterations to this programme will appear on the East Anglia Region web site [www.rsc.org/adearegion]. Travel suggestions for getting to Gonville & Caius College maybe found at: <http://www.caiusconference.com/location/index.htm>