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Atomic and Molecular Physics Group

Possible research contributions

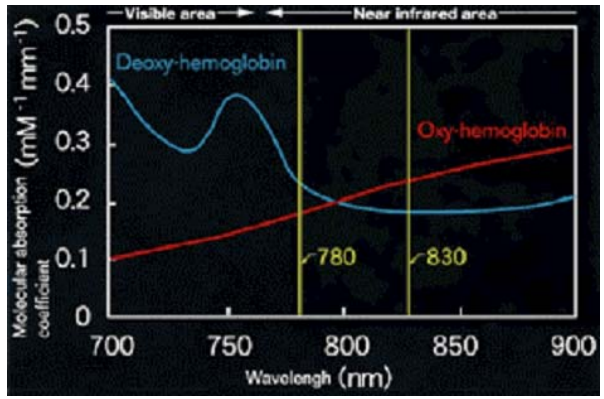
- Low energy dissociative electron attachment studies of small biomolecules in gas phase

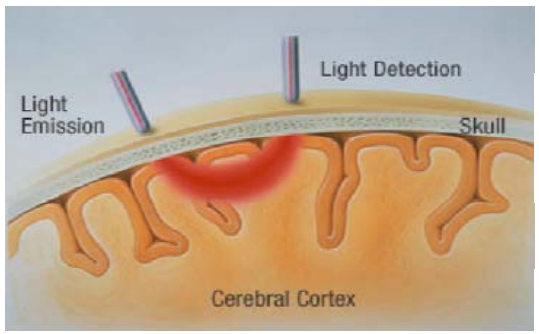
  => radical formation
- Development of electrostatic “cavity” mass spectrometer $\Delta m/m \sim 10^{-5}$
- Multiphoton ionisation of cellular components in vitro => DNA strand breaks
- Fluorescence studies for quantification of DNA strand breaks in vitro

Biomedical Optics Research Group

non-invasive techniques for brain imaging based on NIR spectroscopy

Light attenuation - scattering/absorption
Haemoglobin is main absorber





Increase in neural activity →Increase in localised blood flow (slow)

Also: action-potential related optical changes (fast **and small**)

Non-thermal damage mechanisms?

Terahertz Imaging Group

- THz = Far infra-red EM radiation
- Potential for <u>safe</u> imaging technology for biomedical applications

- New field of research for us, at prototype stage only
- Again, non-thermal damage ?

Science Foundation Ireland

- www.sfi.ie
- Funds research professorships in areas underpinning biotechnology and biomedicine
- Circa €5M over five years
- Must be held in Ireland
- Also, ETS Walton visitor awards: circa €200K for one year visit to Ireland.