



FIRST ANNOUNCEMENT

Workshop / School on Techniques and Applications with Infrared Light

The SESAME Scientific Committee plans to promote the use of infrared (IR) light for basic and applied research in biomedicine and materials science in the Middle East in anticipation of the use of synchrotron radiation for these studies when the SESAME facility is in operation.

Research using IR light is one of the fastest growing activities at many synchrotron facilities around the world. Many applications in the biomedical and materials research fields are well documented and a few examples are listed below. Some studies are of particular interest to industry. For example, synchrotron IR light is being used in the pharmaceutical, medical, forensic, chemical, polymer, electronics, materials and cosmetics industries.

The basic instrument used for these studies is a commercial Fourier transform infrared (FTIR) spectrometer, adapted to a synchrotron light source. Since these instruments are also widely and effectively used with conventional IR sources (which are part of the commercial package), experience can be gained with these instruments in advance of the availability of synchrotron light.

As a first step, we plan a workshop in the Middle East (at a time and location to be announced) to bring interested scientists from SESAME member countries together with scientists experienced in the use of IR spectroscopy at synchrotron facilities around the world. At this workshop, commercial FTIR spectrometers equipped with conventional IR sources will be used to give participants hands-on experience in performing measurements on their particular samples. Interested participants should contact Lisa Miller (NSLS) at lmiller@bnl.gov. As a second step, funds will be requested from UNESCO and other sources to provide commercial FTIR spectrometer systems to groups of scientists from SESAME member countries based on competitive applications.

APPLICATIONS OF IR RADIATION FROM SYNCHROTRON RADIATION SOURCES

Materials research applications

- **Petroleum** – identification of unknown deposits that show up unexpectedly in the refining process
- **Polymers** - Laminated polymers are studied by companies involved with photographic processing technology and the development of barrier materials for protecting food. Acrylic polymers are studied by automotive companies to better understand the breakdown of these materials.
- **Corrosion** - Aircraft companies get information on pitting in alloys used on airplanes, leading to the development of more resistant materials and surface treatments.
- **Paint** - Museums pursue studies of paint to obtain information relevant to the restoration of art objects. Law enforcement agencies study paint samples for forensic purposes.

Biological and medical applications

- **Grains** - Studies of wheat yield information about their starch and protein content.
- **Toxins** – Studies on the effects of toxins, such as dioxin, on single living cells
- **Protein Folding** – Time-resolved measurements of sub-millisecond folding of proteins
- **Bone Disease** – Examination of the protein and mineral content in osteoporosis
- **Cancer** - Gelatinase degradation products and pathways in model systems of extracellular matrix

For More Information on Applications of Synchrotron IR Light:

- IR web page at the NSLS: <http://infrared.nsls.bnl.gov/>
- IR web page at the ALS: <http://infrared.als.lbl.gov/>

Organizing committee:

Larry Carr (NSLS - USA), Mike Martin (ALS – USA), Lisa Miller (NSLS - USA), Irit Sagi (Weizmann Inst. - Israel), Gwyn Williams (Jefferson Lab. - USA), Herman Winick (SSRL - USA)