

## IR Sample Preparation: A Practical Guide Goals

The objective of this module is to provide the reader a set of guidelines for how to prepare a variety of samples for FT-IR analysis through several means as well as to provide the reader tables of common optical materials, deuterated solvents and their IR-transparent windows

The module will be broken down into seven sections:

- Plates and IR Optical Materials
- Preparation of Mulls
- Preparation of Pellets
- Preparation of Thin Film Cells
  - Deuterated Solvent Effects
- Troubleshooting
- Tables
- References

A discussion of the materials used in IR spectroscopy will be provided so as to provide the reader with a way of deciding what method and what materials to use for a particular technique or frequency range. This section will contain a table of the different salts used for pellets and plates so that the reader has this information easily accessible. The table will include: A list of salts, their respective IR-transparent regions, the solvents they are soluble in and of course references to where the information was obtained.

The preparation sections will contain generalized step-by-step instructions and guidelines for handling and preparing samples possibly accompanied by pictures. Since the equipment used by the reader may be wildly different than what previous experience the author had the instructions will be limited to preparation of the samples.

In the preparation of thin-film liquid cells there will be a short discussion of the effect that deuteration has on the IR absorption of solvents since it may come up during the course of a study. Included here is mention that isotopically labeled materials can be used to determine what bands absolutely correspond to substituents within the sample.

The troubleshooting section will contain some simple observations and their solutions based upon the experience of working on a particular instrument. For instance, a noisy spectrum is often attributable to a moist atmosphere or scratches on the salt plate. These can both be remediated and the problem should clean up.

The Tables section will contain the tables mentioned in the previous sections and references and further reading will be included at the end of the module.