傅里叶变换红外光谱仪

1 样品制备：最好使用光谱纯级 KBr(至少分析纯级)，事先用研钵研细(200 目以上)，并在 120℃以上烘 4 个小时以上后置于干燥器中冷却后备用；先压一个纯 KBr 片用来做背景；然后将预先研磨好的样品跟 KBr 粉末以 1：100-150 的比例迅速混匀，装样压片。

2 连接仪器：开启电脑显示器和主机电源登陆 Windows，在桌面双击 **Spectrum** 软件图标，登陆用户名选择 Analyst，点击 OK 下一步，仪器类型选择 **Spectrum 100** 点击 **OK**，连接仪器，进入到软件主界面（若仪器长时间没有用，选择仪器类型点击 **OK** 后偶尔会出现 **Communication Failed**，重试几次仍然出现此现象时，将仪器后面的电源开关关闭，等待 5min 之后再开启仪器，然后按照上面的步骤连接仪器即可）。

3 观测能量：在 **Instruments** 下面点击 **Monitor**，观测能量，**Maximum Value** 和 **Current Value** 一个蓝色、一个红色的条出现，右边显示数值大小，点击 **Reset** 后 **Current Value** 数值即可稳定后即可，仪器状态及软件跟仪器的通讯没有问题可以开始工作。

4 扫描背景：将压好的纯 KBr 片放进样品仓样品架上，在 **Instrument** 下面点击 **Scan**，跳出扫描设置对话框，首先输入背景文件名，然后设置扫描参数，包括起始波数范围，通常 4000-400cm^{-1}；Scan 选择 **Background**；扫描次数或扫描时间，通常选择扫描次数即可，透射模式下扫描 2 或 4 次即可，使用其他附件时(如 ATR)，扫描次数可以设置多一些如 8 次、16 次，甚至 32 次、64 次，扫描次数越多信噪比会越好；分辨率通常使用 4cm^{-1} 即可，设置好后点击 **Apply**、**Start**、**Scan** 即开始扫描背景。

5 扫描样品：将压好的样品片放进样品仓样品架上，然后在 **Instrument** 下面点击 **Scan**，跳出扫描设置对话框，输入样品文件名，其他参数不需要做任何更改，点击 **Start**，**Scan** 即开始扫描样品。扫描完之后软件专家系统会给出所得到的光谱图质量评价报告，点击 **Accept**，样品光谱曲线出现在软件主工作区，光谱数据软件会自动保存在硬盘。

6 做完所有样品后，关闭 **Spectrum** 软件，关闭电脑即可。

功能

对样品进行定性和定量分析，广泛应用于医药化工、地矿、石油、煤炭、环保、海关、宝石鉴定、刑侦鉴定等领域。

Spectrum Frontier FTIR

1. Sample Preparation: Porphyrize spectral purity KBr by mortar (can pass through a 200 mesh), dry the KBr powder above by drying oven for more than 4 hours above 120℃, then place the dried powder into the desiccator immediately to cool down and reserve. Press a pure KBr slice first and scan it as background, then mix the sample powder with KBr powder by a ratio of 1:100-150 quickly, put into the tablet press to tablet.
2. Connect instrument: Turn on the computer, double-click the icon of the **Spectrum** software, log in and choose "**Analyst**", click "**OK**" to next step; "**Instrument type**": Spectrum 100, click " **OK**" to connect the instrument and enter into the "home" page of the software. (There will be "**Communication Failed**" appeared sometimes after choosing "**Instrument type**" if the instrument hasn't been used for a long-term. Retry several times. If this problem still cannot be solved, turn off the instrument, and reset after 5 min.)
3. Observe Energy: Click Monitor to observe the energy. When "**Maximum Value**" (a blue item) and "**Current Value**" (a red item) are both appeared, click "**Reset**" and then the values shown at right are stable, the instrument and software connect well and can begin to work.
4. Scan the background: Place the slide clamp with pure KBr slice into sample cabin, click "**Scan**" under "**Instrument**" item, and "**Scan setting up**" dialog box jumps out. Input the background file name, then set up the scanning parameters which contain starting and ending wave number ranges (usually 4000-400 cm^{-1}); Then choose "**Scan-Background-Scan times or scanning time** ", most of times scan 2 or 4 times under "**Transmission**" mode, and scan 8, 16, 32, and even 64 times when using the other accessories (eg: ATR), the more times it is scanned, the higher the signal to noise ratio is; The resolution ratio is always 4 cm^{-1}. After setting up, click "**Apply**", "**Start**", "**Scan**" to start to scan background.
5. Scan sample: Place the slide clamp with sample slice into sample cabin, click "**Scan**" under "**Instrument**" item, and "**Scan setting up**" dialog box jumps out. Input the sample's name, don't change the other parameters, then click "**Start**", "**Scan**" to start to scan samples. After finishing scanning, there will be a quality evaluation report on the spectrogram. Click "**Accept**", then the spectrogram of the samples will be on the host working area of the software, related data will be auto-saved in hard disk.
6. Switching off procedure: Turn off the Spectrum software and then the computer.

Function

Qualitative and quantitative analysis of samples, can be widely used in the fields of medicine, chemical, mineral oil, coal, environmental protection, customs, gem identification, criminal identification etc.