

## i-Raman® Series for Biomedical Applications

Raman is an ideal technique for molecular fingerprinting and is sensitive to the chemical changes associated with disease. Raman spectroscopy is becoming more pervasive in biomedical diagnostics because of the demand for near real-time and minimally invasive analysis. Applications include: examination of biopsies, cytology, drug efficacy studies, histopathology, surgical targets and treatment monitoring.

Some of the most active research areas are the analysis of abnormalities in tissue samples such as brain, breast, bone, and cervix; as well as the identification of biomarkers for early stage detection of various diseases, including cancer.

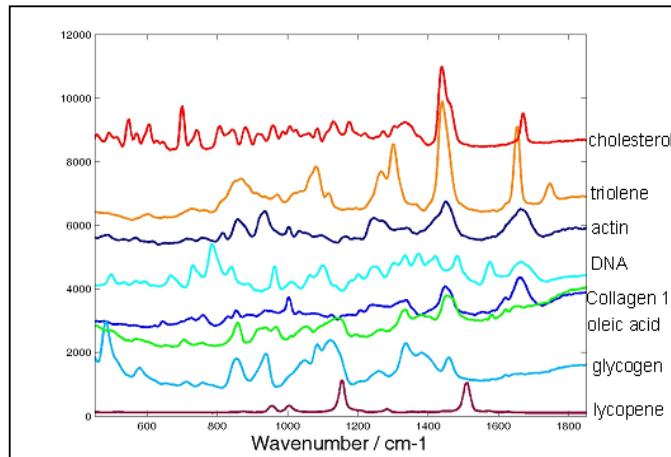
Raman has also been used to investigate blood disorders such as anemia, as well as understand cell growth in bacteria, phytoplankton, viruses and other micro-organisms.

There are a number of important functional groups related to biomedical testing, which have characteristic Raman frequencies. Tissue samples include components such as lipids, fatty acids and protein, all of which have vibrations in the Raman spectrum. The most significant spectral regions include:

- X-H Bonds (e.g. C-H stretches): 4000-2500  $\text{cm}^{-1}$  region
- Triple Bonds (e.g.  $\text{N} \equiv \text{C}$ ): 2500-2000  $\text{cm}^{-1}$  region
- Double Bonds (e.g.  $\text{C}=\text{C}$ ,  $\text{N}=\text{C}$ ): 2000-1500  $\text{cm}^{-1}$  region
- Complex Patterns (e.g. C-O; C-N and bands in the fingerprint region): 1500-600  $\text{cm}^{-1}$  region

### Key Advantages of the i-Raman Series:

- Laser power adjustable down to 1%
- Different laser excitation wavelengths available (532, 785, or 1064 nm)
- Fiber probe (including microprobe) for easy sampling
- XYZ stage / BAC151B for direct measurement of bacterial colonies in petri dish / tissue samples etc.
- BWIQ for multivariate data analysis
- SERS compatibility
- Proven track record in clinical work evidenced by published research which uses B&W Tek instruments



## i-Raman® Series Set-Up for Biomedical Applications



**To perform high quality measurements for these applications, you will need:**

- i-Raman Plus 785S with E-grade Probe Upgrade to Extend Range to  $65\text{cm}^{-1}$  (BWS465)
- Trigger Lab Grade Probe (BAC102)
- Microprobe (BAC200)
- Video Microscope (BAC151B)
- Quantitative Analysis Software (BWIQ)

Contact your local B&W Tek representative today or visit us at [bwtek.com](http://bwtek.com)