CLAIMS

1. A method of calibrating a fiber-optic Raman spectroscope system, the system comprising a laser source, a spectroscope and a fiber optic probe to transmit light from the laser source to a target and return scattered light to the spectroscope, the method comprising:

transmitting light from the laser source to a standard target having a known spectrum;

recording a calibration spectrum of the scattered light from the standard target; ~~and~~

comparing the known spectrum and the calibration system and generating a transfer function, and storing the transfer function; and

subsequently illuminating a test subject, recording a spectrum and correcting the spectrum in accordance with the stored transfer function.

2. The method according to claim 1 comprising recording calibration spectra for each of a plurality of fiber optic probes, calculating a transfer function for the system including each of said probes, and associating the transfer function with the corresponding probe.

~~3. The method according to claim 1 or claim 1 comprising the steps of subsequently illuminating a test subject, recording a spectrum and correcting the spectrum in accordance with the stored transfer function.~~

~~4~~3. The method according to any one of claims 1 - ~~3~~ 2 wherein the spectrometer has an associated spectrometer transfer function and the probe has an associated probe transfer function, and the transfer function is a function of the spectrometer transfer function and the probe transfer function.

~~5~~4. The method according to any one of claims 1 - ~~4~~ 3 comprising, on a primary spectrometer system, calculating a first transfer function with a primary fiber optic probe, and a second transfer function with a secondary fiber optic probe, and calculating a calibration function based on the first-transfer function and second transfer function.

~~6~~5. The method according to claim ~~5~~ 4 comprising associating the calibration function with the secondary fiber optic probe.

~~7~~6. The method according to claim ~~5~~ 4 or claim ~~6~~ 5 comprising, on a secondary spectrometer system, using the primary fiber optic probe and generating a secondary system transfer function and storing the secondary system transfer function.

~~8~~7. The method according to claim ~~7~~ 6 comprising using the secondary fiber optic probe with the secondary spectrometer system and modifying the stored secondary system transfer function in accordance with the calibration function.

~~9~~8. The method according to any one of claims ~~5~~ 6 - ~~8~~ 7 comprising the initial step of performing a wavelength-axis calibration of the secondary spectrometer system in accordance with the primary spectrometer system.

~~10~~9. A method of operating a Raman spectroscope system, the system comprising a laser source, a spectroscope and a fiber optic probe to transmit light from the laser source to a target and return scattered light to the spectroscope,
the method comprising:

transmitting light from the laser source to a target having a known spectrum;

recording a spectrum of the scattered light from the target; ~~and~~

modifying the recorded spectrum in accordance with a stored transfer function; and

subsequently illuminating a test subject, recording a spectrum and correcting the spectrum in accordance with the stored transfer function.

~~11~~10. The method according to claim ~~10~~ 9 wherein the stored transfer function corresponds to the spectrometer and the fiber optic probe.

~~12~~11. The method according to claim ~~10~~ 9 wherein the stored transfer function corresponds to the spectrometer and a primary fiber optic probe and the method further comprises modifying the stored transfer function in accordance with a stored calibration function associated with the fiber optic probe.

~~13~~12. A Raman spectroscope system comprising a laser source, a spectroscope and a fiber optic probe to transmit light from the laser source to a target and return scattered light to the spectroscope, and a stored transfer function, the system being operable to transmit light from the laser source to a target having a known spectrum, record a spectrum of the scattered light from the target, ~~and~~ modify the recorded spectrum in accordance with the stored transfer function, and subsequently illuminating a test subject, recording a spectrum and correcting the spectrum in accordance with the stored transfer function..

~~14~~13. The system according to claim ~~13~~ 12 wherein the stored transfer function corresponds to the spectrometer and the fiber optic probe.

~~15~~14. The system according to claim ~~13~~ 12 wherein the stored transfer function corresponds to the spectrometer and a primary fiber optic probe and the method further comprises modifying the stored transfer function in accordance with a stored calibration function associated with the fiber optic probe.