Serstech 785nm

The optimal compromise between fluorescence and Raman signal

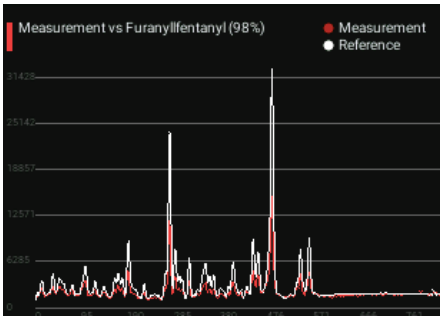
The 785nm laser provides a balance of performance with maximum Raman signal and lower fluorescence, providing the optimal economic performance. Making it the best choice for most professionals.

Serstech has chosen 785nm as it is the best compromise between a strong Raman signal (4 times better than 1064nm) and fluorescence. A shorter wavelength gives a stronger Raman but is slightly more prone to fluorescence.

Longer wavelengths (1064nm) are less likely to generate fluorescence, but they also generate a much weaker Raman signal. To compensate, 1064nm must use a stronger laser and longer measurement times and thus the likelihood to burn or igniting the sample is significantly higher. 1064nm devices consume more battery, are more expensive, larger, and heavier than a 785nm device.

Serstech Arx mkII sensor and algorithms effectively compensate for the wavelength deficiencies, minimizing the impact of fluorescence while maintaining a strong Raman signal. Our advanced technology ensures optimal performance even with the challenges posed by shorter wavelengths.

Performance	785nm	1064nm
Excitation Efficiency	Average	Poor
Fluorescence	Average	Good
Avoidance of sample heating	Average	Poor
Detector sensitivity	Good	Poor
Integration time	Good	Poor



Serstech's 785nm is a more efficient and less expensive solution.

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Excitation efficiency Raman scattering efficiency is proportional to the laser wavelength. For example, Raman scattering at 785nm is much better than at 1064nm. Effectively meaning that scan time is much longer at higher wavelengths as compared to 785nm.

Detector sensitivity 785nm Raman systems use silicon-based CCD or CMOS detectors, which have an excellent response and efficiency. Serstech has now switched from CCD to a CMOS sensor which is about 20 times better than the previous CCD sensor.

When using a 1064nm laser it is not possible to use a CCD/CMOS sensor, instead an InGaAs detector is required, which typically has about 1/10 the efficiency of a CCD. An InGaAs sensor also requires cooling, adding size and weight as well as increasing battery consumption. For this reason, 1064nm systems are more expensive, larger, heavier and have worse battery time.

Fluorescence (unwanted) interferes with the measurement of the Raman signal. Generally speaking, shorter laser wavelengths generate more fluorescence. Serstech's 785nm systems have state of the art algorithms and solutions to compensate for that difference.

Laser absorption must also be considered as this may cause sample heating and lead to changes in the samples. Generally, the longer the excitation wavelength, the more the sample absorbs light and energy. To minimize this risk, Serstech has chosen the 785nm laser.

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