



Excitation of Rare Earth Nano-particles

Nano particles are with immunoassays in micro channel-based biosensors.

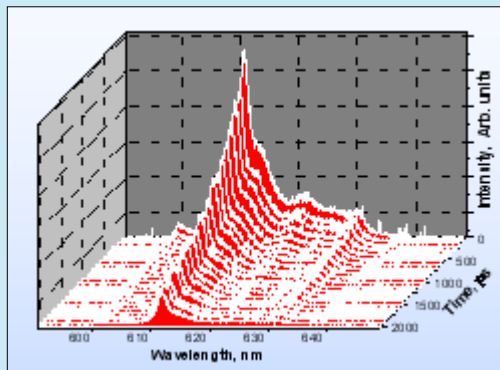
The OPO is being used to excite nanoparticles of lanthanide oxides, primarily Eu and Tb, that are doped into hosts such as Y_2O_3 or Gd_2O_3 and are attached to antibodies. The nanoparticles are used in microchannel-based biosensors with immunoassay detection of environmental toxins and other analytes. The laser can be tuned to a narrow absorption of Eu at 466 nm. The short laser life time allows us to do time gated detection by using the long emission lifetimes of the nanophosphors (> 1 ms), thus avoiding background scattering and autofluorescence from bio samples. This is superior to flash lamp excitation that has a long pulse width. We have improved the limits of detection by up to 4 orders of magnitude compared to conventional immunoassays such as an ELISA.

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Key Words:
Immunoassay
Nano-particles
Lanthanide