Mirror Cuvettes for Fluorescence Spectroscopy

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Mirror cuvettes [1-3] are intended for measuring the fluorescence of weakly absorbing solutions and can be used to register the excitation and emission spectra in UV and visible region, and life-times.

The cuvettes provide for many-fold increase of fluorescence intensity due to multiple passage of exciting light through the solution being tested and due to additional fluorescence collected.

In the *mirror* cuvette, the exciting light is reflected by aluminium layer, applied at the outer walls of a quartz cell and provided with protecting coating. The exciting light entering through a narrow window in the center of the front mirror wall undergoes two or three reflections inside the cuvette. The emission is collected at a right angle. The lateral mirror wall, reflecting fluorescence to the registration channel, provides additional collection of the emitted light. The mirror cuvette guarantees 3-5-fold increase of fluorescence. With this cuvette, light losses and polarization artifacts are minimized compared to a common cell positioned near to concave mirrors. The mirror cuvette can be applied for spectrofluorimeters without any modification.

Mirror *micro*-cuvette allows use small amounts of solutions (0.2 – 0.4 ml) and provides 3-4-fold increase of fluorescence. This cuvette places in a special holder, which sets into spectrofluorimeter.

In the mirror cuvette *with transparent quartz diagonal plate*, a sample is pasted or adsorbed on the plate (at its center), which fixed inside by a diagonal manner. The cuvette fills by a solution. The plate can be easy removed or inserted into the cuvette. The same sample can be used many times. This cuvette gives about of 10-fold increase of fluorescence.

[1] *Vekshin N.L.* Multi-pass cuvettes for spectrofluorimetry// *Anal.Chim.Acta* **227**, 1 (1989). Pp. 291-295.

[2] *Vekshin N.L.* Multiple-pass cells for fluorescence spectroscopy// *Optical Engineering Bull.* ***3*** (1994). Pp.18-20.

[3] *Vekshin N.L.* Photonics of Biopolymers. – Berlin, Springer, 2002. 230 pages.