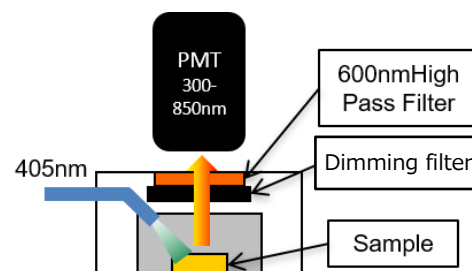


Ultra-sensitive Fluorescence Detection

An attempt was made to detect trace amounts of fluorescence of the fluorescent material haematoporphyrin, using a device incorporating a weak light-emission detector and an excitation laser source.

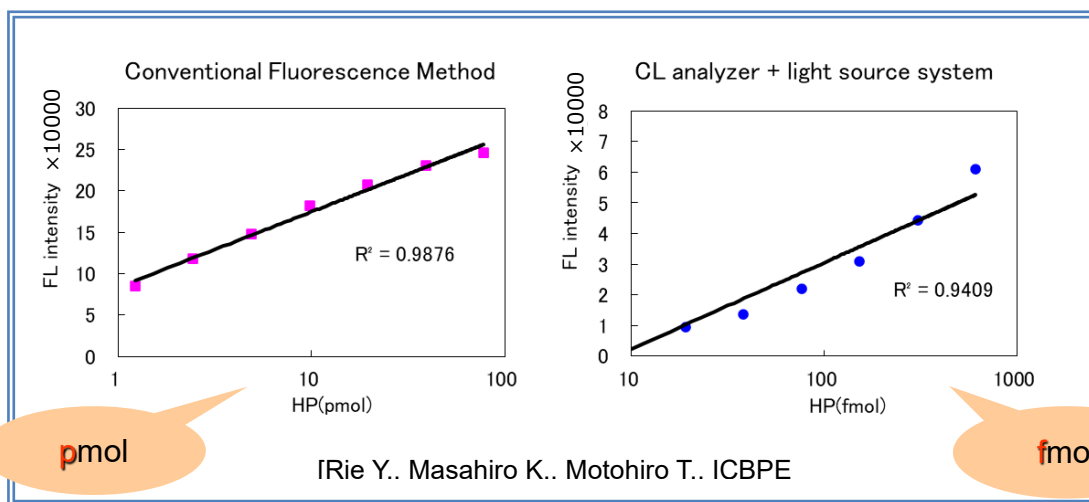
Method

Sample: Haematoporphyrin
 Devices: CLA-FS4 (shown on right), CLS-LA1 Sample Chamber (Laser-induced Fluorescence Type) (405nm), 600nm high pass (HP) filter
 Atmosphere: Air, room temperature
 Method: The sample was placed in a quartz glass Petri dish, and luminescence measurements were performed from 600nm onward while irradiating the sample with the 405nm laser.



Results

The results obtained with a general fluorescence spectrophotometer are shown in the graph on the left, and those obtained with our devices are shown in the graph on the right. The detection limit using the general fluorescence spectrophotometer was about 20pmol, but using our method, a calibration curve could be obtained to about 20fmol.



Note: This device is capable of detecting luminescence down to the level of several tens of photons, and usually captures weak luminescence from the sample itself without excitation light, but the incorporation of excitation light (such as a laser) into the sample chamber enables fluorescence to be detected with higher sensitivity than with a general fluorescence spectrophotometer. As a result, fluorescence that is not visible using the conventional method can be captured with higher sensitivity.