**Enhancement of Raman light scattering in dye-labeled cell membrane on metal-containing conducting polymer film**

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**Abstract.** An enhanced Raman spectroscopy method based on a plasmon resonance in ultrathin metal-containing LB-film deposited on nanoporous anodic alumina supports has been proposed. This material has been utilized to enhance Raman scattering of light in fluorescent-labeled subcellular membrane structures. It has been shown that the plasmon resonance between vibrational modes of the organometallic complexes monolayers and dye-labeled subcellular structures happens. It makes possible to detect interactions between living cell monolayers and an extracellular matrix.

**Keywords:** Raman spectroscopy method, ultrathin metal-containing LB-film, monolayers, cytoplasmic membrane, conducting multi-walled carbon nanotubes

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