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【Speciality】 Laser medicine, Medical Engineering

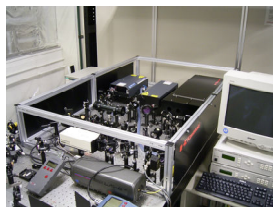
【Keywords】 Quantum Radiation Biology, Quantum Beam Applications, Biomedical Optics

【Research Subject】 Measurement of organic metabolism using low-energy photons

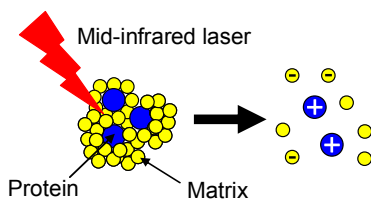
Research Group Activity

- Novel protein analysis using laser ionization mass spectrometry

Ionization mechanism of matrix-assisted laser desorption/ionization using mid-infrared laser

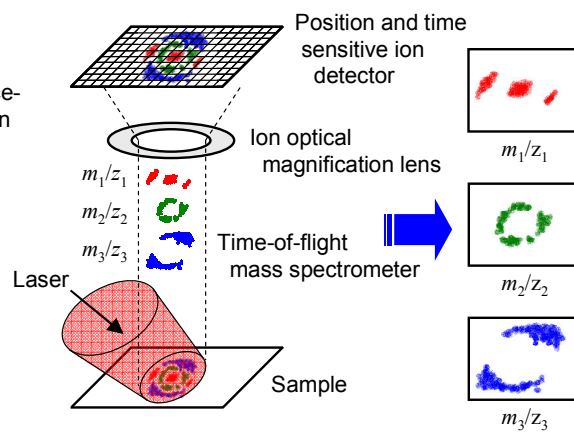


Mid-infrared tunable laser using difference-frequency generation ($\lambda = 5.5\text{-}10\ \mu\text{m}$)



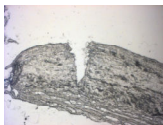
- Development of imaging mass spectrometer using laser ionization

Cellar-scale imaging of each molecule separated by mass spectrometer

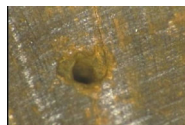


- Development of novel laser therapy

Safe and less-invasive therapy using low-energy photons obtained with a mid-infrared laser



Angioplasty for atherosclerosis ($\lambda = 5.75\ \mu\text{m}$)



Lithotripsy for gallstone ($\lambda = 6.83\ \mu\text{m}$)



Surface modification of dentin ($\lambda = 9.3\ \mu\text{m}$)

- Measurement of optical properties of biological tissues

Construction of database of optical properties for quantitative and advanced laser therapy

