

Abstract Submitted
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Sum frequency generation spectroscopy of interfacial water molecules influenced by plasma-generated radicals TAKAHIRO KONDO, TSUYOHITO ITO, Osaka Univ. — We report the effects of radicals generated by plasma on the structure of water molecules in the air/water interfacial region by sum frequency generation (SFG) spectroscopy. SFG spectroscopy gives molecular level information for the interfacial region. We used a visible pulse laser (wavelength: 532 nm) and a tunable IR pulse laser (wavenumber: 2850-4000 cm^{-1}) for SFG spectroscopy. Radicals are generated by a dielectric barrier discharge (DBD) in the air, and supplied to the water surface. We found that the peak at about 3700 cm^{-1} in the SFG spectrum tends to decrease when the DBD is generated and the radicals are supplied. When the DBD is turned off, the SFG signal recovers. According to previous studies, the SFG peak at about 3700 cm^{-1} is assigned to the stretch mode of free OH in interfacial water molecules. We believe that the radicals interact with the free OH and disturb the vibration, leading to a decrease of the SFG signal when the DBD is generated. When the DBD is turned off, the SFG signal recovers because there are much less radicals in the air. Details on the experimental results and discussions will be presented at the conference.

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