

Abstract Submitted
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Numerical Analysis of Optical Fiber Probing by Ray Tracing Method. AKIHIRO SAKAMOTO, Sumitomo Metal Industries, Co., Ltd., TAKAYUKI SAITO, Shizuoka Univ. — Ray tracing numerical analysis of optical fiber probing, which is one of practical measurement techniques of bubbles and droplets dynamics, has been developed as a reliable instrument of bursting gas-liquid surface. The analysis is constructed by bounded surfaces of flat planes, cylinders, and ellipsoids and constant refractive index objects in three dimensions. The rays' energy of reflection and refraction are calculated repeatedly on the surfaces considered with polarization. The rays' source is assumed as linear polarized light with random fluctuations simulating laser source. The numerical results of the ray trajectories agree with the visualization results. In addition, the signal of returned ray energy forms sharpen peak just before the sensing edge bursting gas-liquid surface, same as experiment.

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