

# OCEAN OPTICS XXIV

Valamar Lacroma Dubrovnik Hotel | Dubrovnik, Croatia | October 7–12, 2018

<https://oceanopticsconference.org>

Monday, October 8

Poster Session 1

16:00–18:00

## Poster 101

### ABSOLUTE CALIBRATION LISST-VSF EYEBALL MEASUREMENT

LISST-VSF is the first commercial instrument developed by SEQUOIA Inc. measuring in situ volume scattering function (VSF) from 0.094 to 150 degree as well as the P12 and P22 scattering element of the Mueller matrix. A LISST-VSF consists two components, a LISST and an Eyeball optics. The LISST measures VSF at small angles ( $<15^\circ$ ) using ring detectors and are absolutely calibrated. The eyeball component measures VSF at large angles ( $>15^\circ$ ) with two photomultiplier tubes (PMT) but are not calibrated. The relative calibration is performed in the data processing package by scaling Eyeball measured-VSF at  $15^\circ$  to LISST ring detector measured VSF at the same angle. This relative calibration works in most cases but will fail in relatively clear waters due to weak forward scattering by small particles. Also, this requires a background, representing pure water or pure seawater, to be determined beforehand. Because of difficulty in preparing pure water or pure seawater, the background is typically prepared by passing water through a  $0.2 \mu\text{m}$ . This however, would preclude any possibility of studying particles of sizes  $< 0.2 \mu\text{m}$ , which could play a significant role in backscattering. We report a series lab experiments using standard beads of different sizes and concentrations to develop an absolute calibration for the LISST-VSF.

**Lianbo Hu**, University of North Dakota, [lianbo.hu@gmail.com](mailto:lianbo.hu@gmail.com)

Yuancheng Xiong, University of North Dakota, [yuanheng.xiong@und.edu](mailto:yuanheng.xiong@und.edu)

Xiaodong Zhang, University of North Dakota, [xiaodong.zhang2@und.edu](mailto:xiaodong.zhang2@und.edu)