Tutorial: Underwater Optical Imaging: Theory and Practice

(Approved for 0.4 Continuing Education Units and 4 Professional Development Hours)

Instructor: Jules S. Jaffe

Overview

Underwater optical imaging is an important area of practical and theoretical interest which considers the physics and engineering aspects of the design and deployment of underwater optical imaging systems. This tutorial is meant to inform a broad range of students about underwater optical imaging, not just engineers or physicists.

The course will last approximately 4 hours during which the students will be informed about:

- The basic physics of the propagation of light in the ocean.
- The computer modeling of underwater light propagation.
- Practical considerations in configuring an underwater imaging system including sensors and lights.
- An up to date survey of both commercial and research systems, framed in the context of the basic knowledge as listed above.

Material provided to the attendees will consist of both literature survey as well as the Power Point presentations used by the instructor (on CD).

Instructor Bio:

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Jules S. Jaffe has been working in underwater optical imaging since 1984 when he participated in designing the ARGO system that found the Titanic. Since that time he has been working on designing, deploying and analyzing the data from a “next generation” of underwater optical imaging systems. Presently, his group is fabricating a laser line scan system for 3-dimensional imaging of the sea floor. His lab is currently building a host of underwater microscopes for imaging miniature marine biota and other features of the environment. He is currently a Research Oceanographer at the Marine Physical lab at the Scripps Institution of Oceanography. His web site is http://jaffeweb.ucsd.edu.