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# The luminescence in all its forms !

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## Abstract

Whether it is phospho-, chemi-, tribo-, fluo- or bioluminescent, luminescence is the result of the matter's ability to reconstitute the energy absorbed during stimulation in the form of photons.

We are presenting here the pedagogical workshop sequence allowing the identification of the different forms of luminescence and the understanding of the ability of the living organisms to transform energy to produce light.

The first part of this workshop is a verbal and audiovisual presentation explaining how the bioluminescence operates. They are presented thanks to practical examples : the discovery, the biochemical processes , bioluminescence's functions and the bioluminescent species. A part of this presentation is devoted to dinoflagellate species belonging to the genus *Pyrocystis*.

The second part takes place in the laboratory. Thanks to living cell cultures, participants visualize under a microscope the cell structure from two *Pyrocystis* species in order to identify structures involved in the bioluminescence.

During the third part, participants sit in a dark room. The workshop starts with the presentation of different forms of luminescence using simple and entertaining manipulations : phosphorescence, fluorescence, chemiluminescence, triboluminescence...

Bioluminescence is presented thanks to *Pyrocystis* cell cultures. Some simple manipulations are helpful to make the biological cycle, the bioluminescence's functions and the stimulating mechanism in those species more understandable.

An experiment allows revealing the energy produced by these organisms and let us imagine what applications of this living light could be introduced in our daily life in the future.

As a conclusion, participants are asked to realize a last experiment in order to keep a souvenir of the light emitted by the one we call " sea sparkle ".

**Keywords:** luminescence, dinoflagellates, pyrocystis, pedagogical workshop

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