Adela Andea and the New Bioluminescence 0

Posted on December 29th, 2011 in Art, Science

Romanian-born, Texas based artist Adela Andea creates complex light sculptures and installations using LED and CCL lights along with pulsing electrical components.

I've not seen any of these pieces in person, but if they are this hypnotically beautiful in photographs, I am sure it's exponentially more pleasurable to be present in their divine light.

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Andea has said that she strives to create “futuristic eco-systems….that ebb and flow between organic biological forms and glowing technological systems”. Her oeuvre varies widely, but the work that resonates with me is irresistably dynamic. My favorite pieces have a palpable exuberance that is a welcome respite from much of the technologically vanguard artwork I see that tends to highlight the dystopian.

She recently showed at this year's Art Basel Miami, and has had multiple solo exhibitions in her home state of Texas, including an early 2011 show entitled "Bioluminescence".

(Lux, Lumens and Candelas, 2010, split looms, foam, various plastics, CCFL, LED and light bulbs)

Biologically speaking, this is the production and emission of light by a living organism. How, you ask? By the interaction of a light-emitting molecule called luciferin with an oxidizing enzyme called luciferase. Fireflies, glow worms, and an estimated 90% of deep-sea marine life, such as the glass squid, Caridean shrimp, and the impressively psychedelic comb jellyfish possess this ability. Here's the latter in action:

Scientists now know that bioluminescence is generally used for luring prey, repelling predators, attracting a mate, and/or inter- and intra-species communication, though most discoveries and advancements in the field have taken place only recently, in the last 15 years. In 2008, three biochemists were awarded the Nobel Prize in Chemistry for their work with green fluorescent protein (GFP), which was first isolated from the bioluminescent Aequorea Victoria jellyfish. With the aid of GFP, researchers have developed ways to watch processes that were previously invisible, such as the development of nerve cells in the brain or how cancer cells spread. This comprehensive academic review from January 2010 details all of the recent discoveries that, with the help of new methods and technology, have brought about great advances in understanding of the molecular basis of bioluminescence, its physiological control, and its significance in marine communities.

Most bioluminescent organisms in the marine environment generate light in response to mechanical stimulation, which often leads to brilliant displays in the wakes of ships and in breaking waves. Dinoflagellates are the most common sources of bioluminescence at the surface of the ocean. A single cubic foot of seawater will usually yield several thousand single-cell dinoflagellates, each, when excited, a living minuscule ember. This makes for an otherworldly visual display:

(photo by Kit O'Carra)

(photo by Joshua Wu)

The most consistent and concentrated displays of surface-level bioluminescence are in Puerto Rico. It is home to three bioluminescent bays: the Laguna Grande in Fajardo, Parguera Biobay in La Parguera, (though overboating, pollution, and other human intervention has greatly reduced its bioluminescence), and most impressively, Mosquito Bay in Vieques. Visit during the New Moon for maximum glow.

I'll leave you with a bioluminscent lullaby:

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