

FOR IMMEDIATE RELEASE

## **Biophotonic Solutions Inc. Technology Used at ICFO in Barcelona to Study Photosynthesis**

**EAST LANSING, Mich., February 18, 2014** – [Biophotonic Solutions Inc.](#) (BSI), the world leader in automated [laser pulse compression](#), announces that its “MIIPS” laser pulse characterization, shaping, and compression technology was used in an advanced laser microscopy setup created by researchers at ICFO—the Institute of Photonic Sciences—in Barcelona, Spain, to study photosynthesis at the level of single molecules. The researchers observed energy transfer in single light-harvesting complexes, laying groundwork for understanding the role of quantum physics in nature’s highly efficient and robust photosynthetic processes.

During photosynthesis in a plant or other organism, sunlight is absorbed by light-harvesting pigment-protein antenna complexes, which funnel it to a reaction center where it is converted to chemical energy. In the ICFO experiments, the researchers isolated individual antenna complexes of a purple bacterium, and then used femtosecond pump-probe laser microscopy to demonstrate and observe the ultrafast quantum mechanical dynamics behind the energy transfer.

The researchers incorporated a customized BSI “MIIPS Box 640” pulse shaping instrument into their single-beam, two-color, [pump-probe laser microscopy](#) setup. This allowed them to instantly characterize and compress the pump and probe pulses to just 15 femtoseconds without having to engineer a significantly more complex laser setup. The shaper controlled the delay and relative phase between pump and probe pulses with attosecond resolution. A MIIPS Box 640 provides automated ultrafast laser pulse measurement, compression, and shaping in real time, delivering optimized laser pulses at the focal plane on demand.

“Niek van Hulst’s research group at ICFO is at the forefront of light harvesting research and we’re excited that BSI’s technology could play a role in their experiments to explore quantum mechanics in biology,” said Kiyomi Monro, BSI CEO. “MIIPS is a unique tool for ultrafast laser users who need consistent femtosecond-range pulses very specifically tailored to their application and available on demand. We are proud to have contributed to this important project at ICFO and to other leading-edge experiments at prominent institutes around the world.”

For complete details on the ICFO experiments, please see “Quantum Coherent Energy Transfer over Varying Pathways in Single Light-Harvesting Complexes,” by Richard Hildner, Daan Brinks, Jana B. Nieder, Richard J. Cogdell, Niek F. van Hulst, *Science*, 21 June 2013: 340 (6139), 1448-1451. (<https://www.sciencemag.org/content/340/6139/1448.abstract>)

### **About Biophotonic Solutions Inc.**

Biophotonic Solutions Inc. (BSI; [www.biophotonicsolutions.com](http://www.biophotonicsolutions.com)) is the world leader in automated, adaptive femtosecond laser pulse compression and shaping. BSI develops, licenses,

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and sells cost-effective solutions that drive the ultimate performance from lasers for high-precision imaging, material processing, and other applications where transform-limited ultrafast pulses are desirable at the focal plane. BSI's products, based on exclusively licensed technology, unlock the latent power of ultrafast lasers for industrial, scientific, medical, and defense applications.

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