

Young Slovenian Scientist Plans Cutting-edge Lab for Bio-integrated Photonics

A scientist working at the Jožef Stefan Institute (IJS) plans to establish a world leading laboratory for bio-integrated photonics, and has recently received a special grant for his project *Live and Edible Photonics*.

Matjaž Humar, a postdoctoral research assistant at the Condensed Matter Physics department, was awarded a special EUR 311,202 grant by the institute's director for a three-year period.

The goal is to launch a world-leading bio-integrated photonics lab, Humar told the STA news service. He explained that bio-integrated photonics was a new field with countless opportunities to explore.

To study living organisms, bio-integrated photonics traditionally relies on artificial light sources and optical components made from non-biocompatible materials.

Humar wants to take it one step further and develop optical material that is biocompatible and can be ingested or implanted in the human body. For example, biodegradable photonics would allow doctors to take higher resolution images deeper inside the body than ever before.

Last year, Humar and his colleague Seok-Hyun Yun of the Harvard Medical School succeeded in implanting and operating a laser inside a single living human cell for the first time. They also proved that fat cells already contain lasers that only need to be activated.

Humar presented his achievement at the 66th Nobel Laureate Meeting 2016 in Lindau, Germany. About 400 young scientists from 80 countries were invited, with 29 Nobel laureates in attendance.

His next goal is to build lasers entirely made of living cells and organisms that are biocompatible and biodegradable in the human body. At the moment he is working on a project that aims to build laser tattoos.

Matjaž Humar graduated from the Faculty of Mathematics and Physics at the University of Ljubljana, and has a PhD in Nanoscience and Nanotechnology from the Jožef Stefan International Postgraduate School.

He has a postdoctoral position at the Harvard Medical School's Wellman Center for Photomedicine and is a Marie Curie fellow.

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