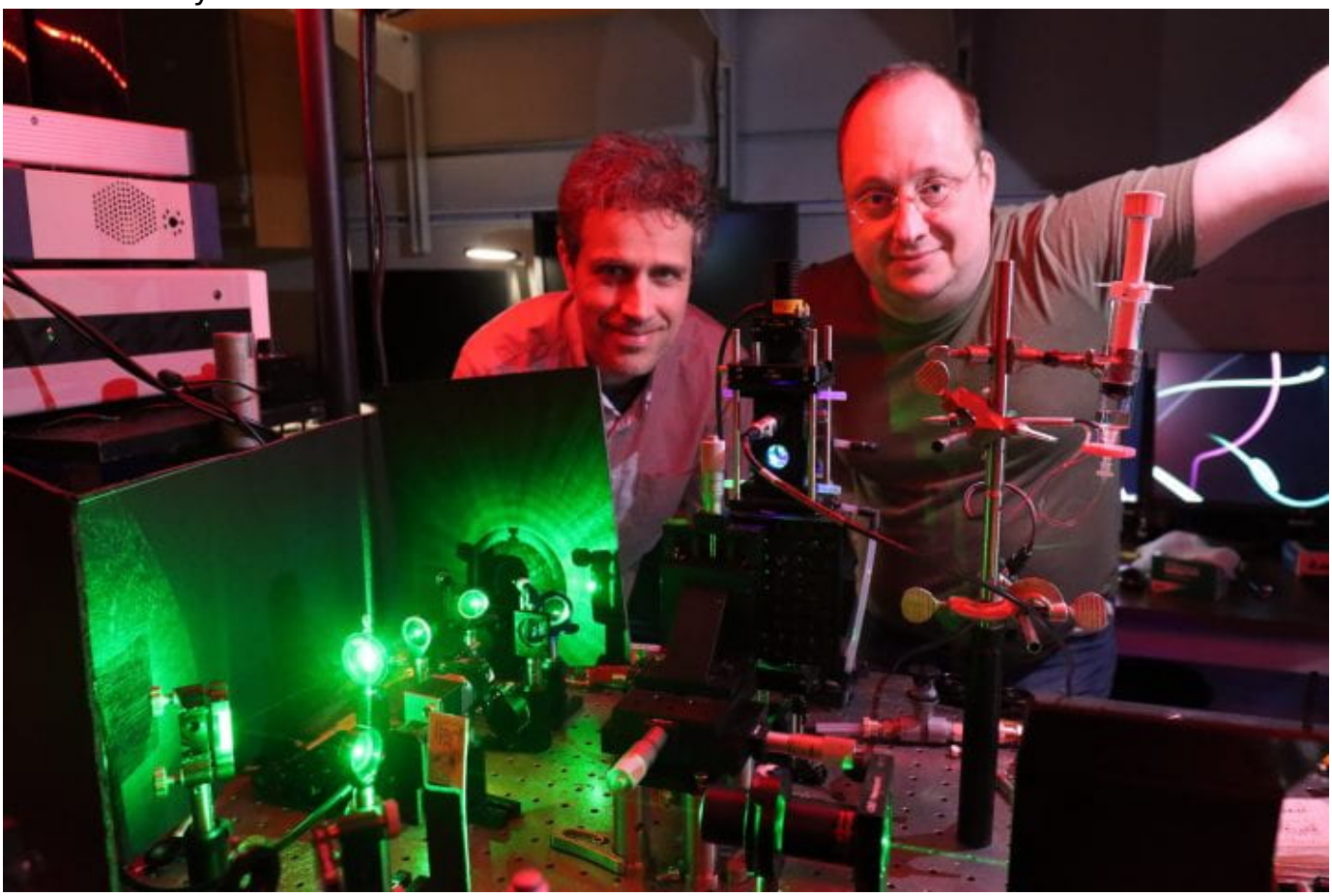
# Dima Fishman, Eric Potma and Aleks Noskov receive the Beall Innovation Award in the Physical Sciences

The award will support research into silicon-based LEDs.
Thursday, December 11, 2025
Lucas Van Wyk Joel
UC Irvine Physical Sciences Communications



Adjunct professor Dmitry Fishman (right) and Professor Eric Potma.

Picture Credit:
Lucas Van Wyk Joel

Adjunct Professor Dmitry Fishman, Professor Eric Potma, and Dr. Aleks Noskov of the UC Irvine Department of Chemistry were awarded the 11th annual Beall Innovation Award in the Physical Sciences. The team received the award after presenting a winning talk titled “Unlocking Light in Silicon: First Ultrabroadband Light-emitting Diode Made from Silicon,” which they gave during the School of Physical Science’s Shark Tank event on Monday, November 17. During the presentation, the team outlined how silicon, despite being the backbone of modern electronics, remains fundamentally limited by its inability to efficiently emit light. This long-standing constraint has impeded progress toward low-cost, bright, silicon-based light sources and, more importantly, fully integrated silicon photonics – a technology that uses light to transfer data on computer microchips. “Overcoming fundamental barriers in current semiconductor technologies, without abandoning the existing silicon manufacturing infrastructure, requires a new way of controlling light–matter interactions,” said Fishman. “Building on a recent discovery of a new quantum photonic phenomenon, photonic Heisenberg matter, we focus not on modifying the material, but on engineering the photonic state. In other words, light itself.” It’s work that could lead to completely new technologies. “Leveraging this newly discovered quantum photonic phenomenon, our project aims to deliver the first energy-efficient, electrically driven, all-silicon light-emitting diode,” Potma said. “If successful, this platform could redefine the landscape of silicon photonics, opening opportunities once considered unattainable and accelerating innovation across the entire field of electronics that interact in some way with light.”

News Briefs
Chemistry
The Future of Fundamental Science
View PDF