



THE UNIVERSITY OF ARIZONA  
Wyant College  
of Optical Sciences

Optical Sciences Winter School Keynote Presentation by  
**Nobel Laureate Donna Strickland**

## **FROM NONLINEAR OPTICS TO HIGH-INTENSITY LASER PHYSICS**

**Saturday,  
January 7th  
9:00 AM**

**INTEGRATED LEARNING  
CENTER ROOM 120  
1500 E UNIVERSITY BLVD  
TUCSON AZ 85721**



### **ABSTRACT**

The laser increased the intensity of light that can be generated by orders of magnitude and thus brought about nonlinear optical interactions with matter. Chirped pulse amplification, also known as CPA, changed the intensity level by a few more orders of magnitude and helped usher in a new type of laser-matter interaction that is referred to as high-intensity laser physics. In this talk, I will discuss the differences between nonlinear optics and high-intensity laser physics. The development of CPA and why short, intense laser pulses can cut transparent material will also be included. I will also discuss future applications.

### **SPEAKER BIOGRAPHY**

#### **Donna Strickland**

Professor, Department of Physics & Astronomy, University of Waterloo  
Nobel Laureate, Physics 2018

Donna Strickland is a professor in the Department of Physics and Astronomy at the University of Waterloo and is one of the recipients of the Nobel Prize in Physics 2018 for developing chirped pulse amplification with Gérard Mourou, her PhD supervisor at the time. They published this Nobel-winning research in 1985 when Strickland was a PhD student at the University of Rochester.

Strickland earned a B.Eng. from McMaster University and a PhD in optics from the University of Rochester. Strickland was a research associate at the National Research Council Canada, a physicist at Lawrence Livermore National Laboratory and a member of technical staff at Princeton University. In 1997, she joined the University of Waterloo, where her ultrafast laser group develops high-intensity laser systems for nonlinear optics investigations. She was named a 2021 Hagler Fellow of Texas A&M University and sits on the Growth Technology Advisory Board of Applied Materials.

Strickland served as the president of the Optica (formerly OSA) in 2013 and is a fellow of Optica, SPIE, the Royal Society of Canada and the Royal Society. She is an honorary fellow of the Canadian Academy of Engineering and the Institute of Physics, an international member of the US National Academy of Science and member of the Pontifical Academy of Science. Strickland was named a Companion of the Order of Canada.

**STUDY OPTICS:**  
[www.optics.arizona.edu](http://www.optics.arizona.edu)

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