

Professor Gérard Mourou

Passion Extreme Light

Professor Gérard Mourou is Professor Haute-Collège at the École Polytechnique and A.D. Moore Emeritus Professor of the University of Michigan. He was born in Albertville in France, got his undergraduate education at the University of Grenoble and graduated in 1967 and obtained his PhD in 1973 by the University of Paris VI. He became professor at the University of Rochester (NY), US, in 1977. In 1985 he devised, with his PhD student Donna Strickland, a method of generating high-intensity (petawatt 10^{15} W), ultra-short pulses that deliver typically 1 J within one picosecond 10^{-12} s, the chirped pulse amplification method, CPA for short.

This method revolutionized the field of optics and opened up the way to the attosecond (10^{-18} s) pulse generation, which has a wide range of applications in physics, chemistry and medicine. CPA, which consists in stretching a laser pulse, reducing its peak power, and then significantly amplifying its power through conventional techniques, renders ultra-brief, ultra-sharp beams that allow for extremely precise cuts that can be used in laser machining and enables, for instance, surgeons to perform millions of corrective eye surgeries. Many other applications are known and are expected in physics, engineering and medicine.

For the invention of CPA, Professor Gérard Mourou and Donna Strickland shared the Nobel Prize of Physics in 2018 with Arthur Ashkin, who invented the optical tweezers that allow grabbing atoms, living cells and viruses.

Professor Gérard Mourou is also behind many other contributions to ultrafast lasers, high-speed electronics and medicine. He is member of the US National Academy of Engineering, of the Russian Science Academy, of the Austrian Science Academy and of The Lombard Academy of Sciences and Letters. He is the recipient of several prizes besides the already mentioned Nobel Prize, such as the Wood OSA (Optical Society Award) in 1995, the SPIE (International Society for Optics and Photonics) Harold Edgerton Award in 1997, the Willis Lamb Award for Laser Science and Quantum Optics in 2005, the Charles Hard Townes Award by OSA in 2009, the Frederic Ives Medal in 2016 (Optical Society of US). He is Chevalier de la Légion d'Honneur of France.

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