



Innovative Attosecond Optics from UltraFast Innovations and Edmund Optics® Awarded Platinum-Level 2022 LFW Innovators Award!

August 22, 2021, Garching (Munich), Germany— UltraFast Innovations (UFI®) and Edmund Optics® (EO) are proud to announce their [Extreme Ultraviolet \(EUV\) Attosecond Multilayer Mirrors](#) have won the Platinum-Level 2022 Laser Focus World (LFW) Innovators Award. This is the highest-level of these awards and recognizes honorees for superb innovation, characterized by a groundbreaking approach to meeting a need, new level of performance, efficiency, ease-of-use, or other beneficial quality.

EUV Attosecond Multilayer Mirrors are used for steering, focusing, and shaping attosecond EUV laser pulses. Designed and produced in atomically-smooth coating layers, these mirrors allow for precision control of wavelength and spectral phase with high efficiency in a growing application space. Attosecond (asec) science pushes the limits of ultrafast lasers. The asec mirrors provided by UltraFast Innovations and Edmund Optics are ideal for attosecond pulse generation and shaping based on high harmonic generation (HHG), free electron lasers (FELs), or other quantum optical applications.

Ultrafast EUV systems are growing in importance for FELs and other quantum optical applications. Laser pulses with asec pulse durations, where $1 \text{ asec} = 10^{-18} \text{ sec}$, provide access to some of the most

fundamental scientific processes, including the motion of electrons. To put the duration of attosecond pulses into perspective: one asec is to one second as one second is to the age of the universe. Today, the shortest generated laser pulses are less than 100 asec, which is comparable to the ground state orbital period of an electron in hydrogen. All ultrafast lasers are characterized by their short pulse durations, and asec lasers push the lower boundaries of pulse duration for ultrafast lasers. Observations of electron localization, the dynamics of decay processes, and the effects of strong fields are just a few of the major findings in the newly-established field of asec science.

Sourcing these types of high-precision ultrafast optics has traditionally been difficult because they often need to be custom designed and the resulting high prices and long lead times for small quantities are prohibitive for many. Edmund Optics has partnered with UltraFast Innovations to make these technologies available globally for immediate shipping. The partnership reduces the price and lead time for small quantities, which is especially important for rapidly repairing broken systems, exploring new ideas for system prototyping, and quickening the pace of scientific discovery through research. The in-stock availability of these mirrors allows designers and system integrators to experiment with ultrafast systems with a lessened upfront investment of both time and cost.

More information on these mirrors can be found [here](#).

About UFI:

Ultrafast Innovations GmbH (UFI®) is a spin-off from the Ludwig-Maximilians-Universität München and the Max Planck Institute of Quantum Optics. UFI is a premium manufacturer of optics with complex designs, dielectric optics for laser applications, and dielectric/metallic multilayer structures for XUV/soft X-ray applications. Combining broadband coherent sources with unique dispersive technology, UFI

also offers the generation and measurement of the shortest pulses in the market in the femto- (UV-VIS-IR) and attosecond (XUV/soft X-ray) ranges.

www.ultrafast-innovations.com

About EO:

Edmund Optics® is a leading global supplier of optics, imaging, and photonics technology and expertise that has served a variety of markets including Life Sciences, Biomedical, Industrial Inspection, Semiconductor, R&D, and Defense since 1942. The company designs and manufactures a wide array of optical components, multi-element lenses, imaging systems, and optomechanical equipment, while supporting OEM applications with volume production of stock and custom products. With locations in more than nine countries across the globe, Edmund Optics employs over 1,100 employees and continues to expand. Customers can purchase items by calling 1-800-363-1992, via the catalog, or on the website at www.edmundoptics.com.