

## Chromium/Scandium multilayer mirrors for isolated attosecond pulses

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Recent advances in the development of attosecond soft X-ray sources towards photon wavelengths below 10 nm are also driving the development of suited broadband multilayer optics for steering and shaping attosecond pulses. We demonstrate that current attosecond experiments in the sub-200 eV range benefit from these improved optics. We present our achievements in utilizing ion-beam deposited Cr/Sc multilayer mirrors, optimized by tailored material dependent deposition and interface polishing [1], for the generation of single attosecond pulses from a high-harmonic cut-off spectrum at a central energy of 145 eV. Isolated attosecond pulses have been measured by soft X-ray-pump/NIR-probe electron streaking experiments [2] and characterized using FROG/CRAB [3]. The results demonstrate that Cr/Sc multilayer mirrors can be used as efficient attosecond optics for reflecting 600 as pulses at a photon energy of 145 eV, which is a prerequisite for present and future attosecond experiments in this energy range.

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