

Perspectives of AMO endstation at Shanghai XFEL

Y. Z. Zhang*, J. Zhu**†, X. C. Wang‡, and Y.H. Jiang**†§¹

* Shanghai Advanced Research Institute, Chinese Academy of Sciences, Shanghai 201210, China

† University of Chinese Academy of Sciences, Beijing 100049, China

‡ Fudan University, Shanghai 200433, China

§ ShanghaiTech University, Shanghai 201210, China

Synopsis The AMO endstation combined with Coltrims and VMI detection technologies is planning to be built up at Shanghai soft X-ray Free Electron Laser (SXFEL). Perspectives and profiles of SXFEL and AMO-endstation are presented here.

Since 2015, the free-electron lasers (FELs) as a new generation of advanced radiation sources, has been becoming an extremely powerful research platform for experimental studies of light-matter interactions in unexplored conditions. In atomic, molecular and optical (AMO) physics, short-wavelength FELs illuminate outstanding applications for exploring multi-photon nonlinear phenomena, observing and controlling reaction dynamics of electrons, atoms and molecules. Experimental studies from simple helium atom to complex bio-molecules, outer-shell to inner-shell electrons, single-photon to multi-photon processes, pulse experiments to time-resolved pump-probe approaches, extreme ultraviolet to hard X-ray regimes, energy spectra to time-resolved momentum spectra have successfully achieved.

Shanghai X-ray FELs delivering seeded and SASE radiations with wavelengths of 50-500 eV and 500-1500 eV, repetition rates of 10-50 Hz, pulse energies of a few μJ to 200 μJ were granted. User endstations will cover applications for AMO, chemical reactions, surface science and biomolecules. For AMO endstation, it will be mounted into the seeded SXFEL beamline, where a combined Coltrims and VMI imaging technologies are planned. More details will be given in the presentation.

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E-mail: jiangyh@sari.ac.cn