

Abstract Submitted  
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**A coherent x-ray source from plasma using high-order harmonic generation**<sup>1</sup> DANE LABAN, SMIJESH ACHARY, NICOLAI KLEMKE, JAMES WOOD, DASHAVIR CHETTY, DAVID KIELPINSKI, IGOR LITVINYUK, ROBERT SANG, Australian Attosecond Science Facility, Centre for Quantum Dynamics, Griffith University — We present progress towards a tabletop light source of coherent x-rays with energies extending up to 5 keV. High-order harmonic generation (HHG) using an infrared ultrashort pulse in an uncharged gaseous medium is able to produce coherent and directional light with energies extending up to several hundred eV. By using a charged plasma as the HHG medium we will be able to extend the cut-off energy and brightness of the light into the keV region. In our proposed source a plasma containing mostly  $\text{Cr}^{5+}$  is needed. The difficulties of producing such a light source arise from ensuring the plasma is spatially uniform and of a specific density to allow for efficient phase-matching of the generated light. We will discuss the experimental design, methodology used to obtain the plasma, present results on the characterization of the plasma, and some early results of the HHG spectrum obtained.

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