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Photoinduced processes such as photoionization and photoexcitation in the vacuum ultra violet (VUV) energy range are considered important for the divertor region in nuclear fusion reactors and in interstellar space because the cross sections (photoionization, photoexcitation) of these processes in relevant species (hydrogen, helium, neon, argon, and biomolecules) become large in that energy range. Herein, a photoionization experiment was conducted for the first time in the synchrotron light source UVSOR-III with VUV photon energies. Plasma production was evidenced by the detection of electron current in Langmuir probe measurements. The photoionized plasma production with VUV radiation in the synchrotron light source will expand the research capability in this field significantly.

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