

Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

A Portable X-pinch Source for Dispersive X-ray Absorption Spectroscopy JERGUS STRUCKA, SIMON BLAND, BARTOSZ KRAWCZYK, SAVVA THEOCHAROUS, JIAQI YAN, ZIJIAN ZHAO, Plasma Physics Group, Imperial College London — Dynamic compression experiments on pulsed-power machines produce more uniform extreme states of matter that can reach mm in size. It is of interest to material science and planetary science to study the phase transitions and long-range structure in these extreme states. Recently, X-ray sources of high fluence and short pulse duration have been used in dispersive geometry to employ X-ray absorption fine structure spectroscopy as an ideal element-specific structural probe. These experiments are traditionally driven by (inter)national scale laser facilities, and more recently synchrotrons. Our next generation portable X-pinch driver – Dry Pinch 1 – is only 30cm x 70cm, weight @50kg and produces >100kA currents in a few 100ns pulse. The X-pinch emits ~100mJ of radiation >10KeV, directly comparable to 3rd generation synchrotron at a distance of <20cm from the pinch. Dry pinch 1 is ideally suited as a complementary source for optimization of experimental setups before high-precision campaigns at large facilities. I will present the recent developments, preliminary results, and future milestones in our spectroscopy campaign.

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Date submitted: 28 Jun 2020

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