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Measurements of Continuum Lowering in Strongly Coupled Plasmas of Elements and Compounds O. CIRICOSTA, S.M. VINKO, T. PRESTON, D. RACKSTRAW, J.S. WARK, University of Oxford, UK, B. BARBREL, K. ENGELHORN, LBNL, T. BURIAN, J. CHALUPSKY, V. HAJKOVA, L. JUHA, IOP, Prague, Czech Republic, B.-I. CHO, GIST, Republic of Korea, H.-K. CHUNG, IAEA, Vienna, Austria, G. DAKOVSKI, P. HEIMANN, M. HOLMES, J. TURNER, SLAC, R.W. LEE, UC Berkeley, S. TOLEIKIS, DESY, Germany, U. ZASTRAU, European XFEL, Germany — We have used the X-ray pulse of the Linac Coherent Light Source to perform a charge-resolved measurement of continuum lowering in solid-density plasmas, at temperatures up to 200 eV, from Mg, Al, Si, alumina, silica and mica. The comparison between Al or Si and their respective compounds shows that the K-edges for the same element in different plasma environments is unaffected by the considerable density differences, contrary to the predictions of any analytical continuum lowering model. Conversely, the K-edges for all of the materials can be approximated surprisingly well by pure atomic-physics calculations, consistent with recent DFT predictions [1]. The results provide strong evidence that the ion-sphere models, used to describe continuum lowering as well as to calculate the equation of state of materials, may need to be revisited for strongly coupled systems.

[1] S.M. Vinko *et al.*, Nat. Comm. **5**, 3533 (2015).

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