

Abstract Submitted  
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**Pressure Evolution of X-ray Raman Spectra in a Novel Monoclinic V2O3 Metal**<sup>1</sup> CHENG-CHIEN CHEN, YANG DING, MAHALINGAM BALASUBRAMANIAN, Argonne National Laboratory, ROBERT GORDON, Argonne National Laboratory/PNCSRF, STEVE M. HEALD, THOMAS GOG, Argonne National Laboratory, MICHEL VAN VEENENDAAL, Argonne National Laboratory/Northern Illinois University — V2O3 is a prototypical metal-to-insulator transition system, where the transition always coincides with a corundum-to-monoclinic structural transition in temperature-dependent studies. However, recent pressure-dependent study demonstrates that the two transitions can be decoupled, showing a novel monoclinic metallic phase above a critical pressure  $P_c$  around 33 GPa. Here we study the corresponding pressure evolution of electronic structure with X-ray Raman scattering. The spectra do not exhibit any appreciable difference at low pressures, but broaden substantially across  $P_c$ . Multiplet calculations with additional screening channels from coherent quasiparticles indicate a weakened screening effect at high pressures. This could result from a decreased coherent quasiparticle strength due to enhanced electronic correlation, suggesting that V2O3 in the high-pressure monoclinic phase is a critical correlated metal on the verge of Mott-insulating behavior.

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