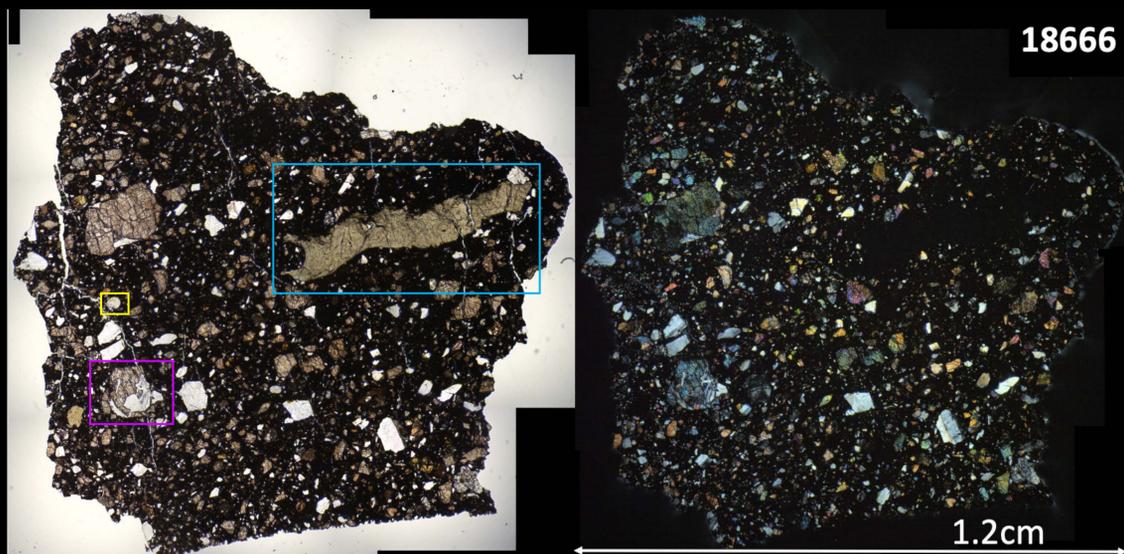
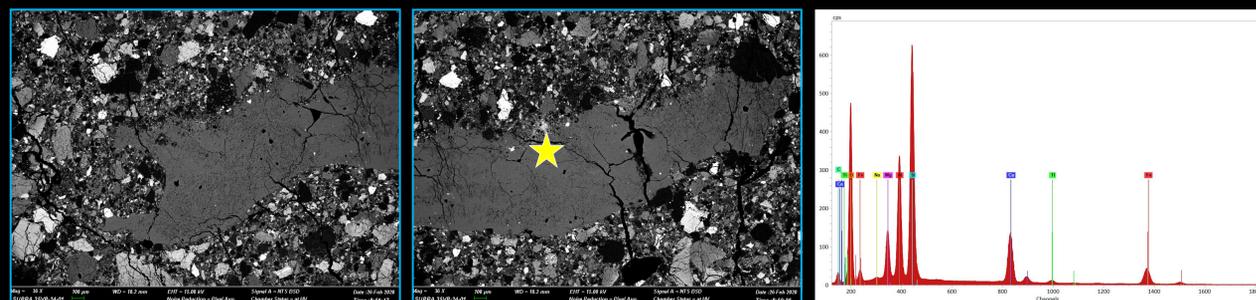
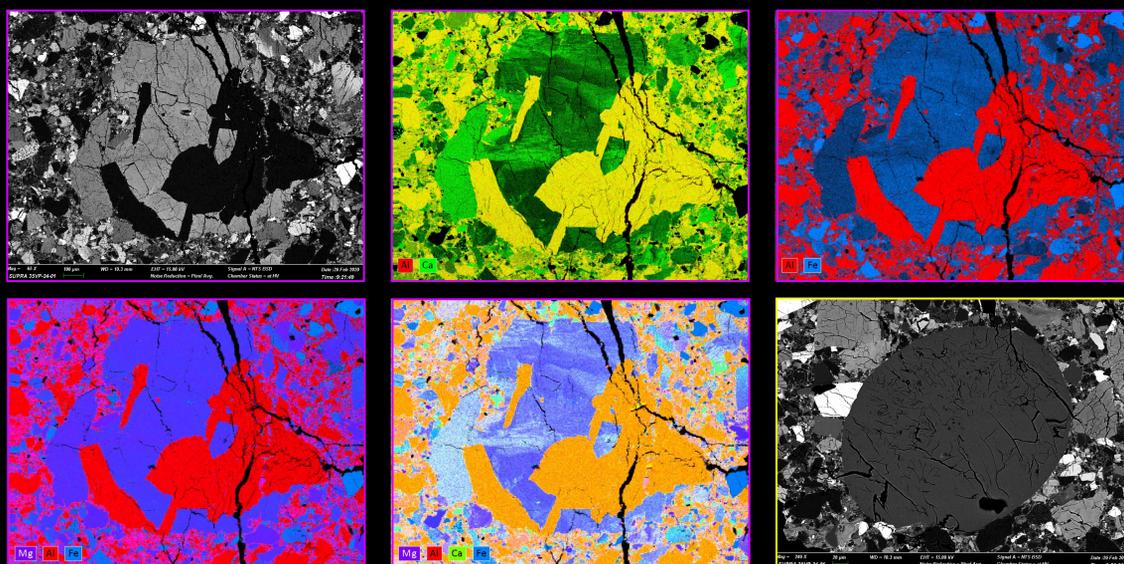


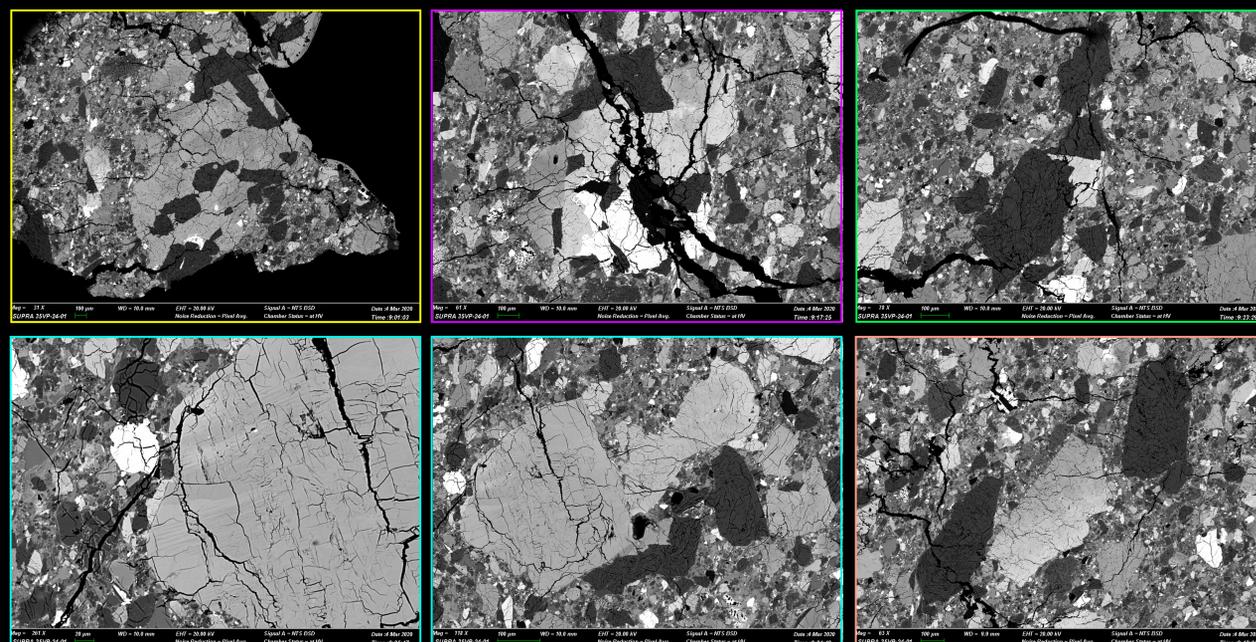
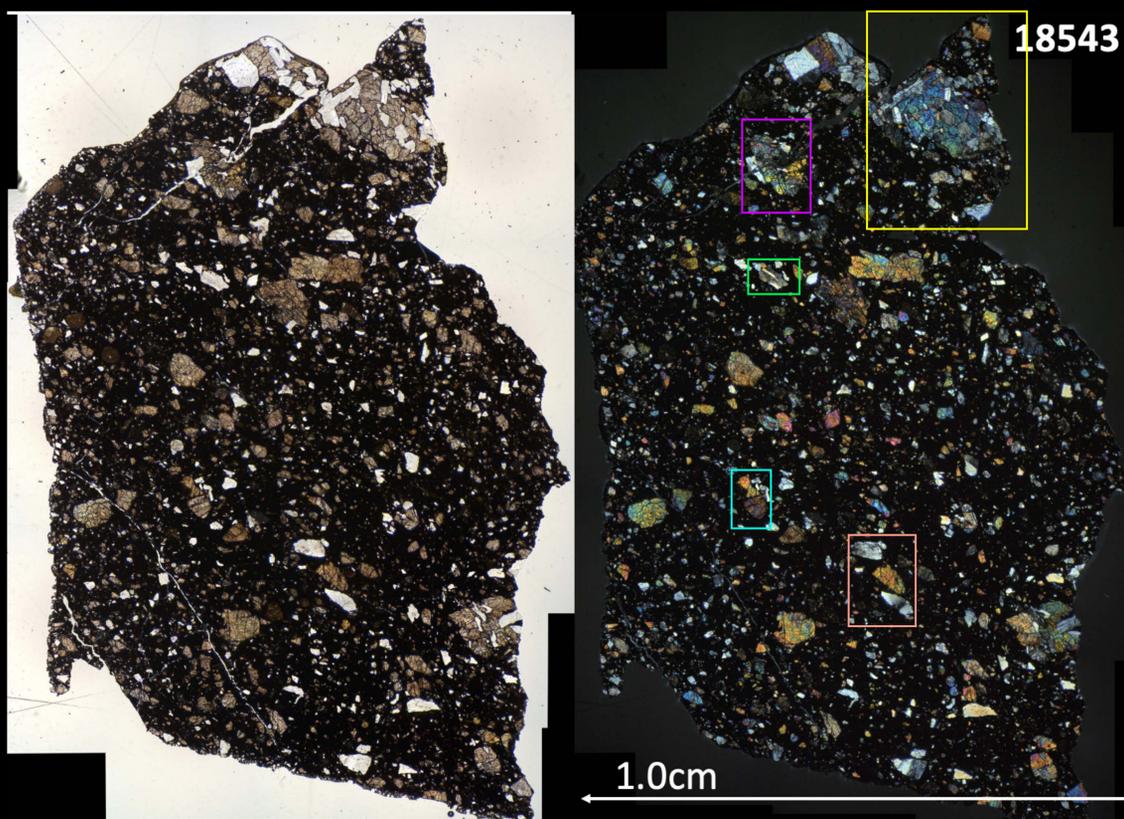
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Scientific Objective: The returned sample suites from the annual Antarctic Search for Meteorites (ANSMET) continues to provide exciting new opportunities for the scientific community to advance understanding of the origin, composition, and history of extraterrestrial materials. The returned sample suite from the Dominion Range 2018 ANSMET expedition was dominated by achondritic meteorites (as reported in the August 2019 Antarctic Meteorite Newsletter, vol. 42, No. 2), and excitingly within this suite, five new lunar meteorites were documented. Specifically, these five new lunar meteorites are basaltic breccias (likely regolith breccias), range in weight from 6.8g to 45.9g, and exhibit characteristics associated with A – A/B weathering^[1]. Thin sections and rock chips of each of the five new lunar meteorites (DOM 18262-9,-5, 18509-8,-5, 18543-9,-5, 18666-12,-5, and 18678-9,-5 respectively) were requested in August 2019 and received in late Fall. The aim of this work is to apply a two-pronged approach to advancing our understanding of the petrochemical, petrophysical, and petrochronological characteristics of this new suite of brecciated basaltic meteorites, i.e. their crystallization, petrogenetic, and impact histories. This will be specifically achieved through a combined microchemical, structural (2D and 3D), and chronological study of major, minor and accessory phases.



Initial study of acquired thin sections was conducted via Polarized Light Microscopy using a Leica DM 2700 P (and associated LAS X software). Entire section images in plane polarized light and cross polarized light are shown in Figures 1 (left) and 2 (below).



Study of thin sections DOM 18666 and 18543 has begun via SEM-EDS in the Center for Advanced Microscopy and Imaging (CAMI) at Miami University. All images and elemental maps were acquired using a Zeiss Supra 35 VP FEG SEM. The elemental maps shown for 18666 took ~30 minutes to acquire. All spatial locations are cross referenced by color.