

Appendix 7-A. Organic maceral photomicrographs

Plate 1 – A and C) White light images of bitumen from Kentucky samples ($R_o = 0.75\%$), B and D) Fluorescent light images of the same material. The dull yellow fluorescing material is amorphinite; the brighter yellow fluorescing “specks” are liptodetrinite.

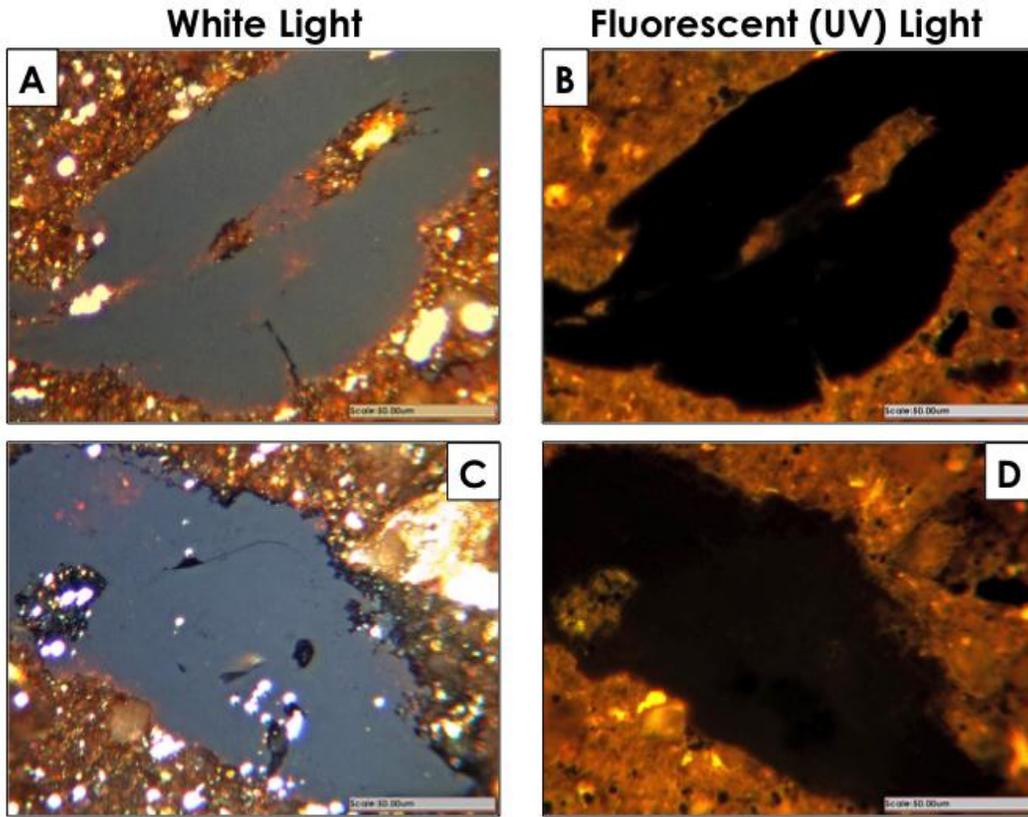
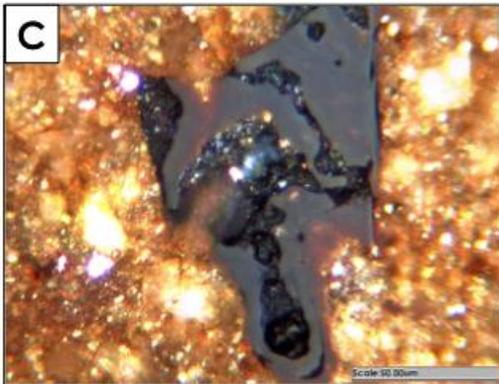
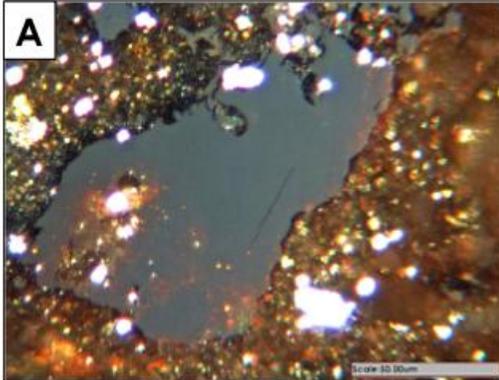


Plate 2 - A and C) White light images of bitumen from Kentucky samples ($R_o = 0.75\%$). The very bright reflecting material in all images is the mineral pyrite, B and D) Fluorescent light images of the same material. The dull yellow fluorescing material is amorphinite; the brighter yellow fluorescing "specks" are liptodetrinite.

White Light



Fluorescent (UV) Light

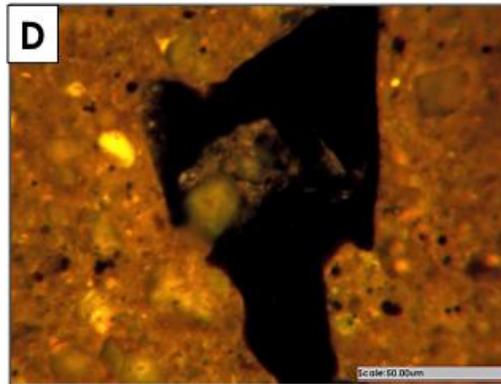
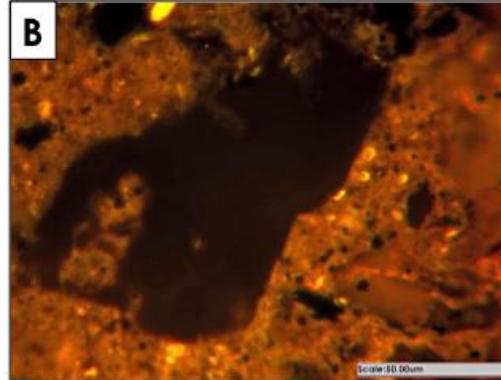


Plate 3 - A and C) White light images of bitumen from central Ohio samples ($R_o = 0.76\%$), B and D) Fluorescent light images of the same material, showing an abundance of amorphinite coating the shale matrix, adjacent to the pieces of bitumen.

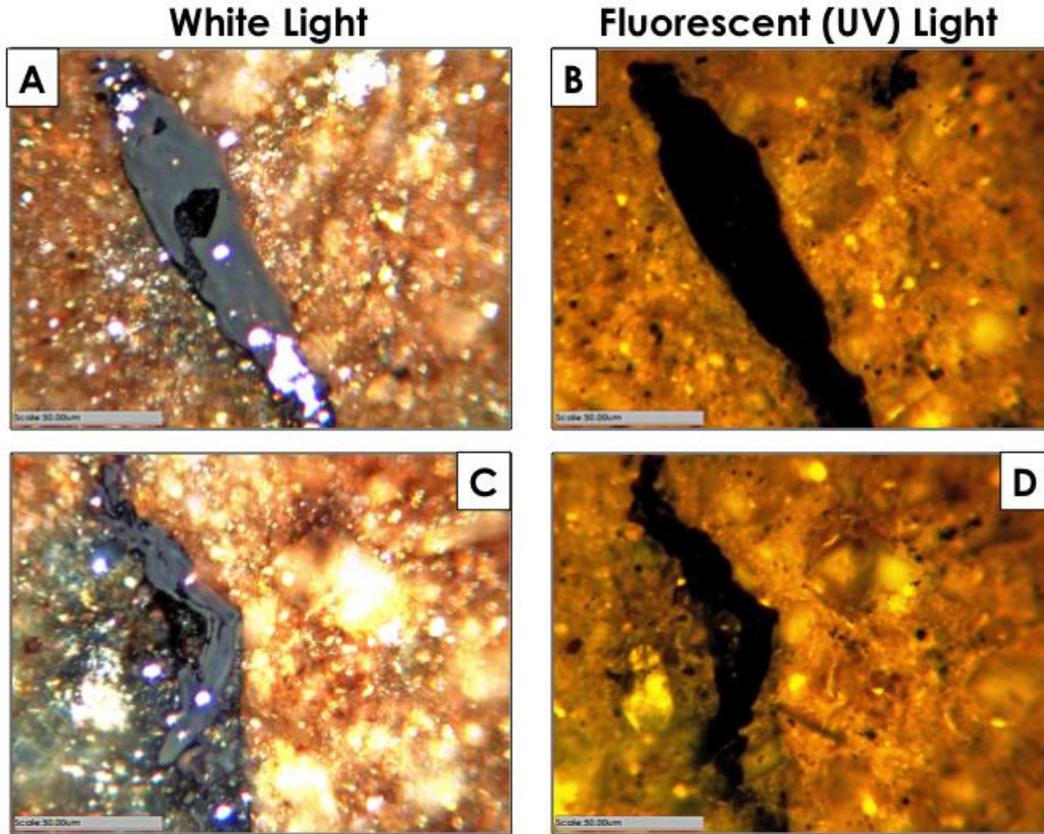
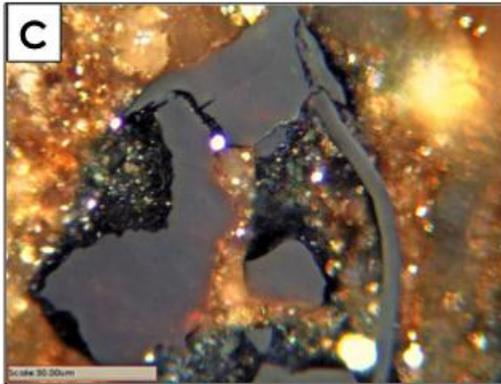
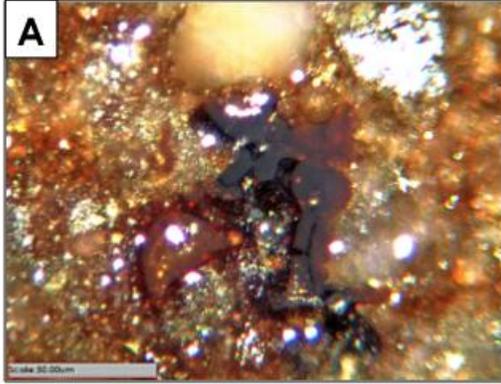


Plate 4 - A and C) White light images of bitumen from central Ohio samples ($R_o = 0.70\%$), B and D) Fluorescent light images of the same material; image B has a low fluorescence, while the bitumen in image D is non-fluorescing.

White Light



Fluorescent (UV) Light

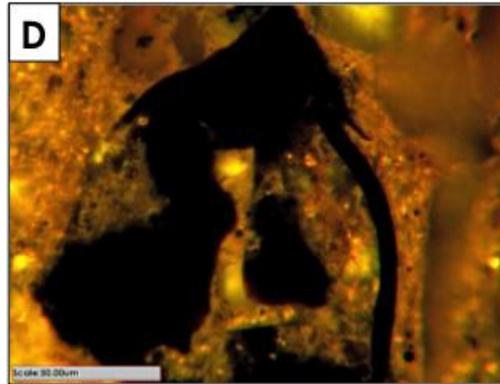
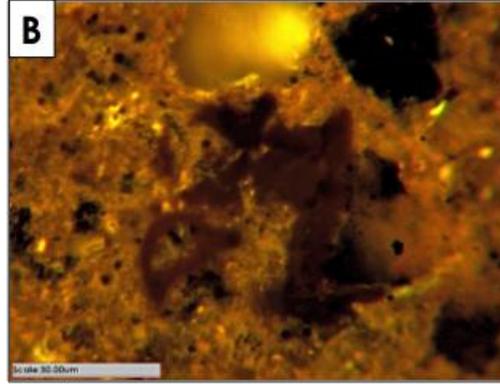


Plate 5 - A and C) White light images of *Gloeocapsomorpha prisca* from northeastern Ohio, B and D) Fluorescent light images of the same material. Note the darker (yellow-orange) appearance of the amorphinite surrounding the *G. prisca* grains, indicating a higher level of thermomaturity ($R_o = 1.1\%$).

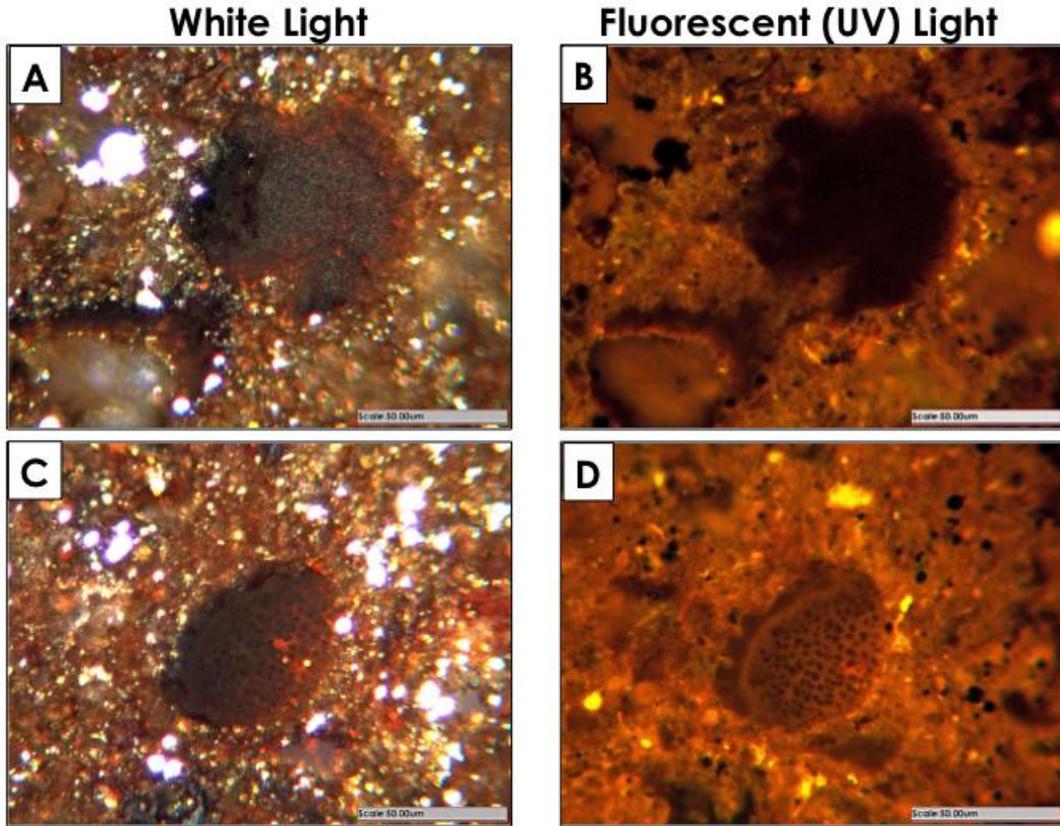


Plate 6 – A and C) White light images of grahamite, with characteristic coarse surface texture from northeastern Ohio ($R_o = 1.17\%$), B and D) Fluorescent light images of the same material. The grahamite is weak to non-fluorescing; amorphinite and liptodetrinite surrounding the bitumen grains are orange-red, which is characteristic for this level of thermomaturation. The bright green fluorescing material is epoxy.

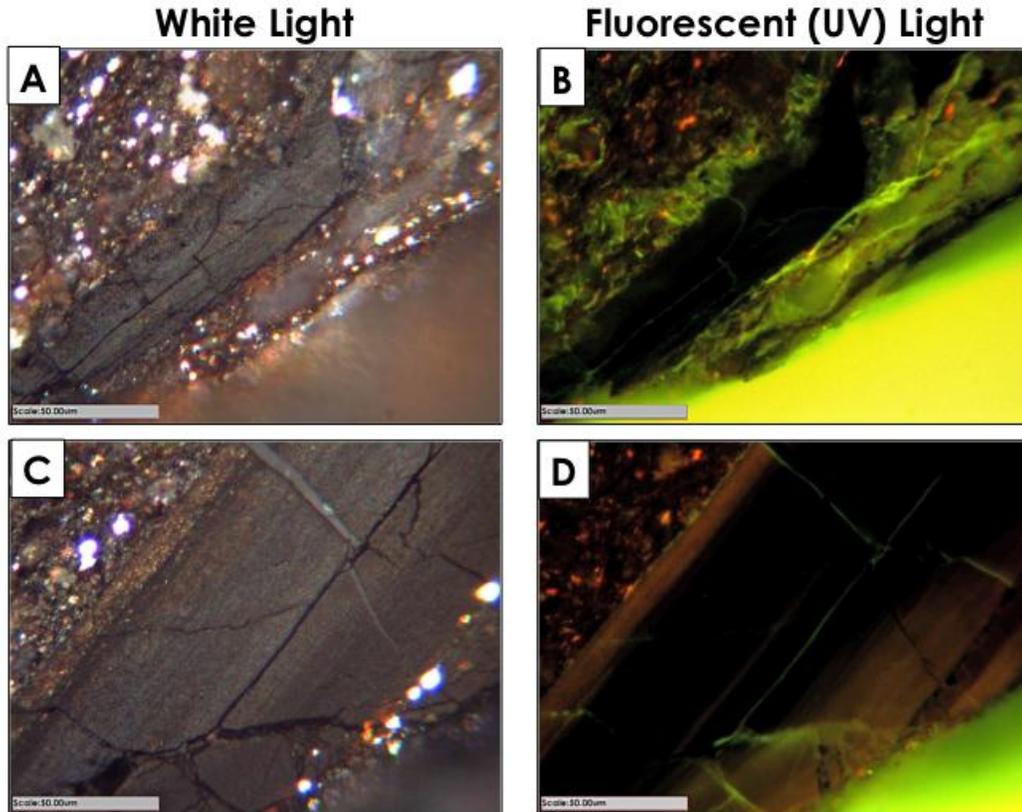


Plate 7 - A and B) White/blue light image pair of a relatively high fluorescing piece of bitumen from northeastern Ohio ($R_o = 1.16$). C and D) White/blue light image pair of a low fluorescing piece of bitumen from northeastern Ohio ($R_o = 0.96$).

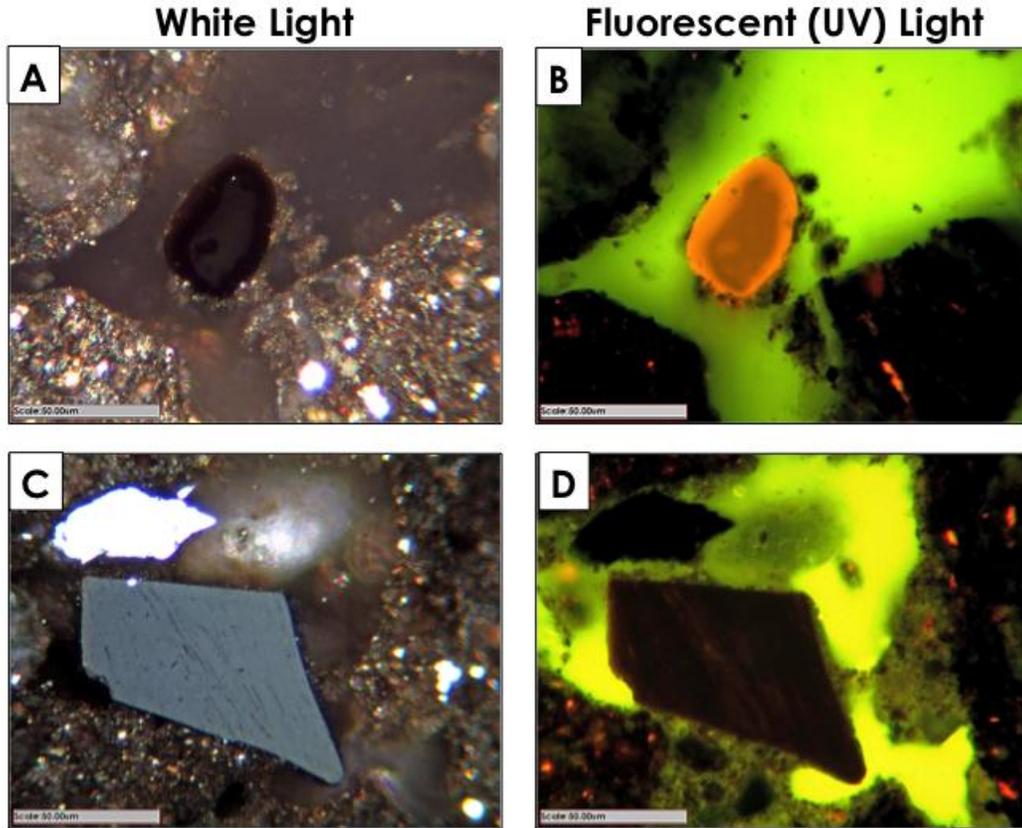


Plate 8 – A and B) White/blue light image pair of grahamite from northeastern Ohio (Ro = 0.96 %), part of which exhibits some fluorescence, C and D) possible zooclast with dull red fluorescence from northeastern Ohio (Ro = 1.34 %). The cause of the fluorescence is unclear, but may be the result of impregnation by petroleum liquids. The red fluorescence color reflects the advanced degree of thermomaturation.

White Light



Fluorescent (UV) Light

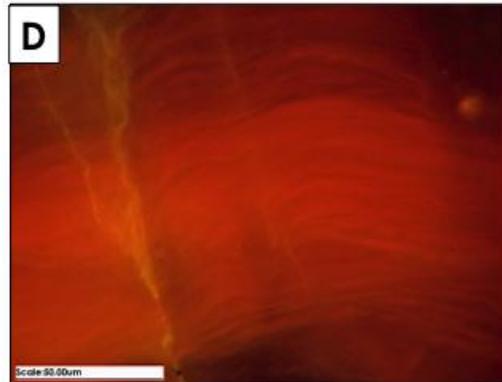
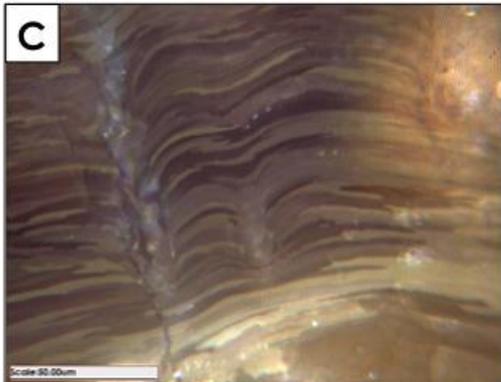
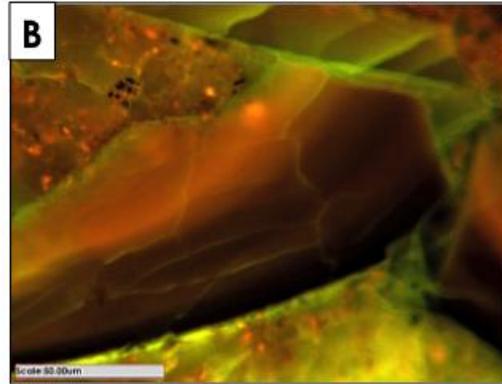


Plate 9 – A and B) White/blue light image pair of grahamite from northeastern Ohio (Ro = 1.12 %), showing characteristic coarse surface texture, C and D) epi-impsonite from the same sample, showing a very smooth surface texture.

White Light

Fluorescent (UV) Light

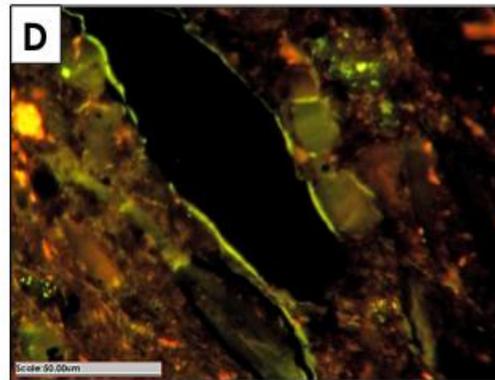
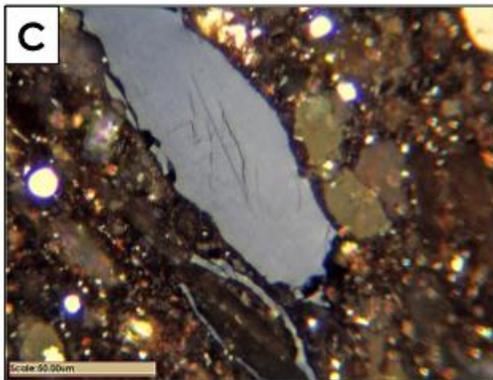
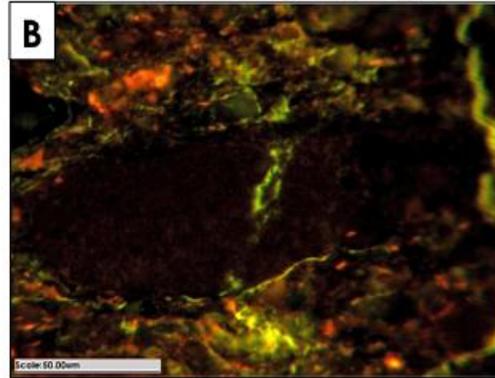
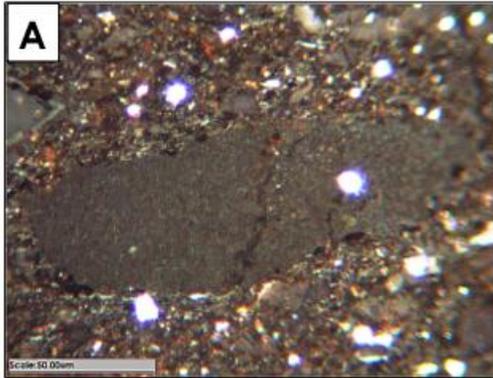
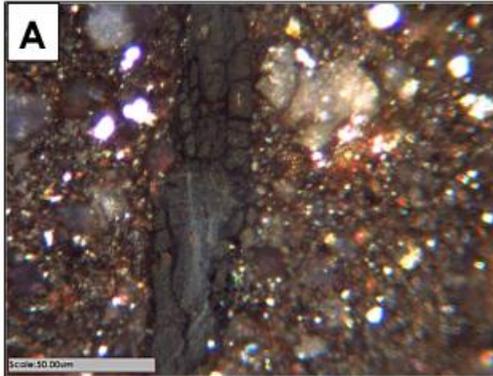


Plate 10 – A and B) White/blue light image pair of grahamite from northeastern Ohio (Ro = 1.19 %), showing characteristic coarse surface texture, C and D) Remnant amorphinite and liptodtrinite in high rank material from northeastern Ohio (Ro = 1.30 %), showing characteristic red fluorescence.

White Light



Fluorescent (UV) Light

