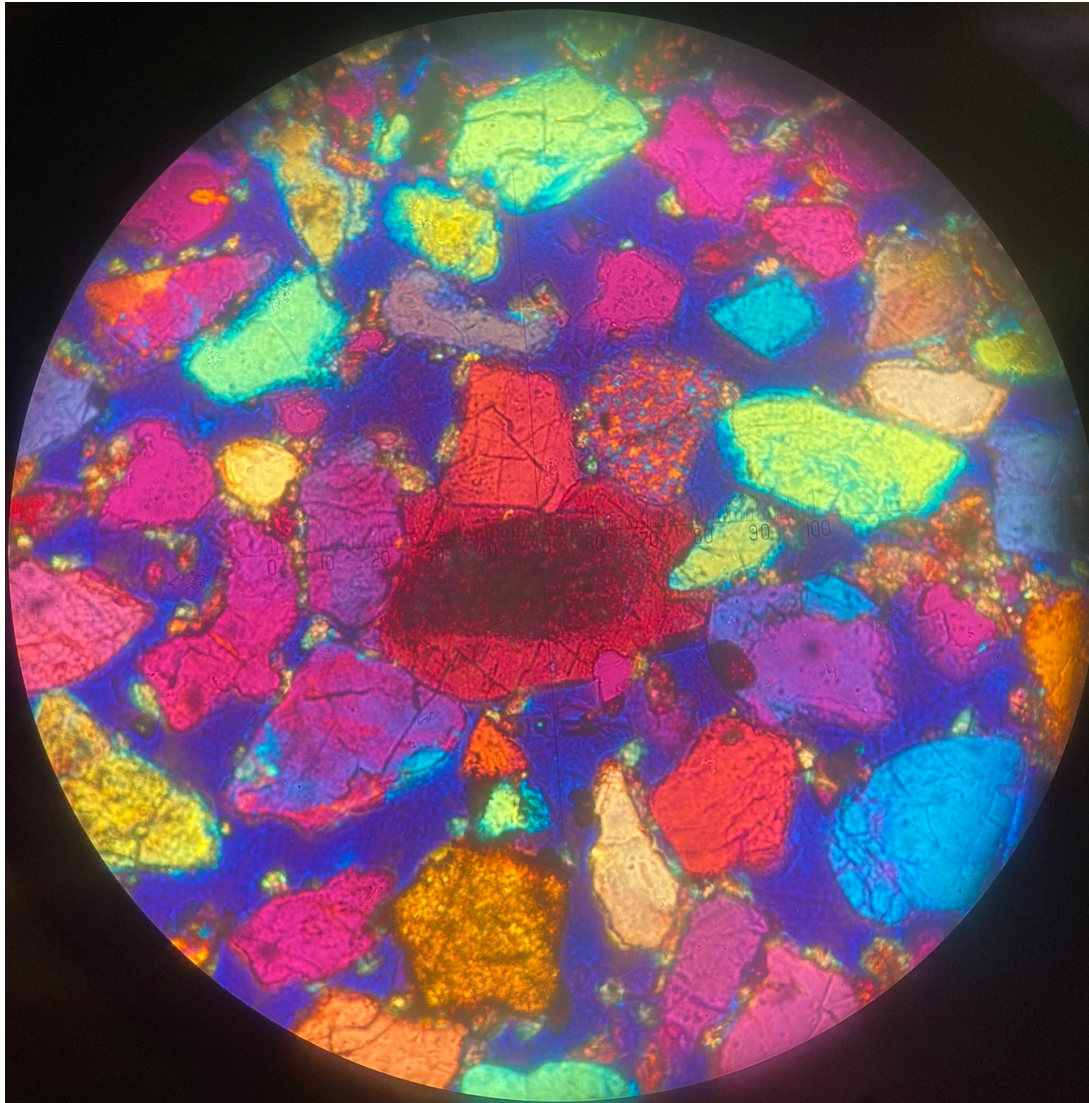
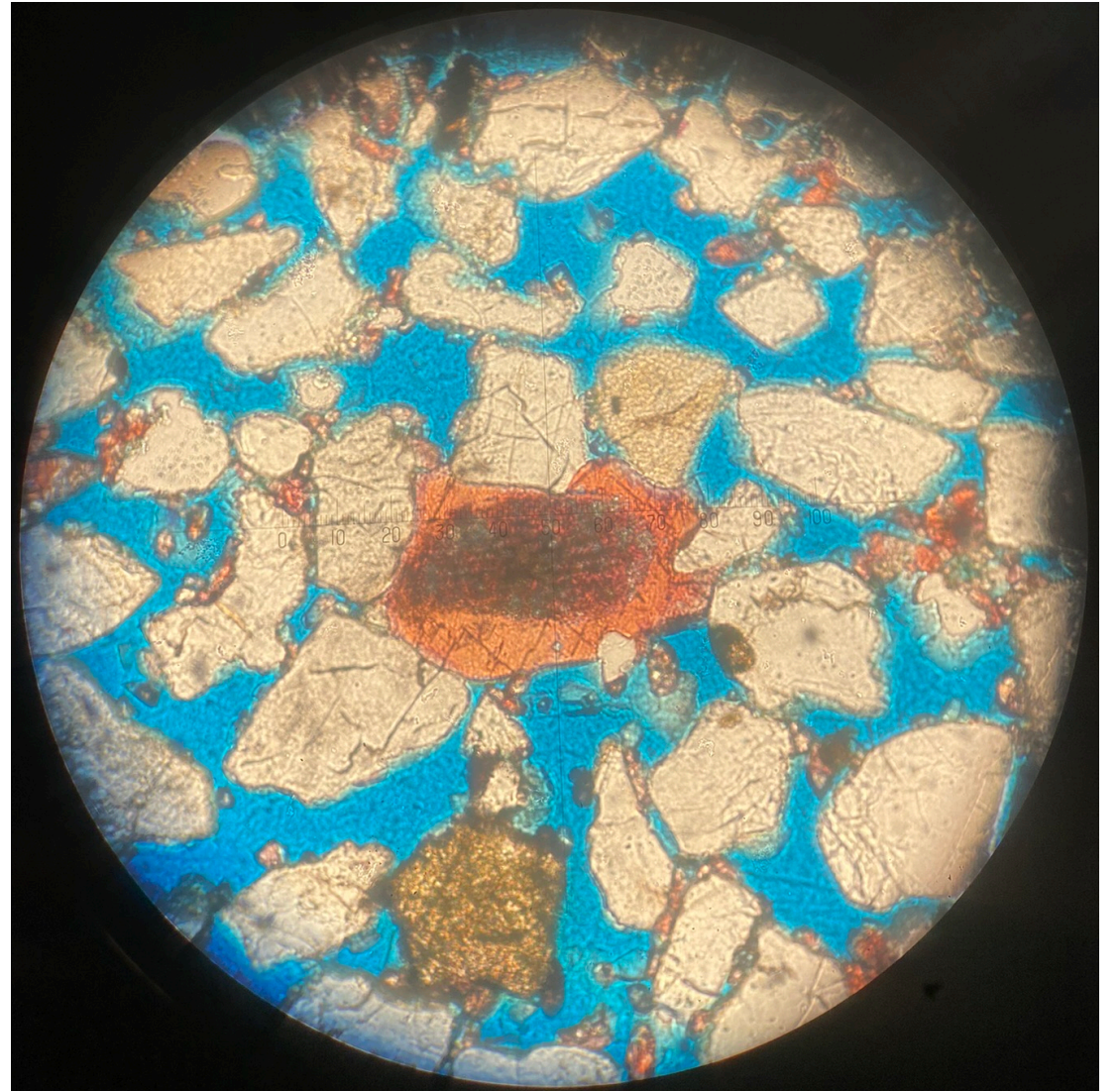


BB3N

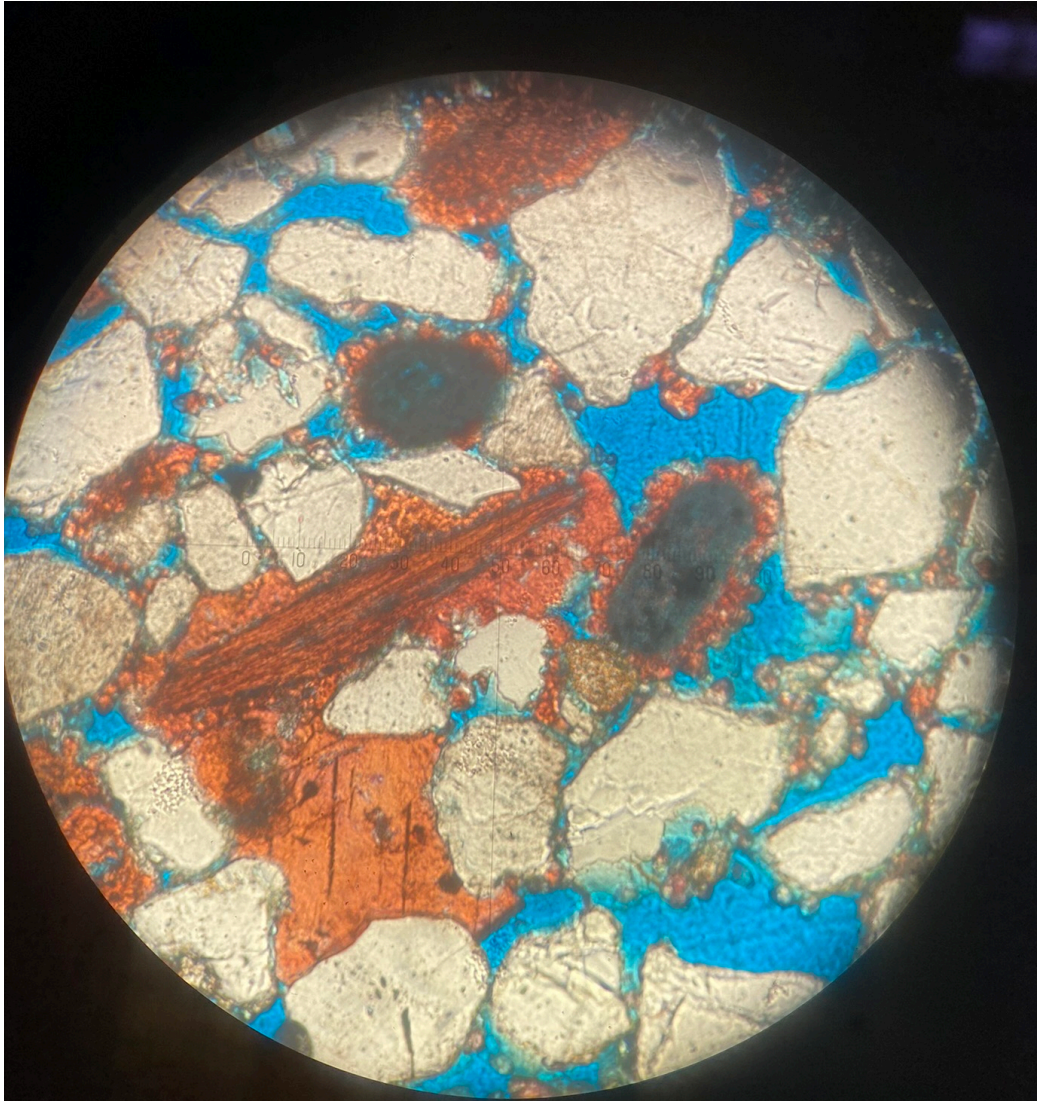


XPL



PPL

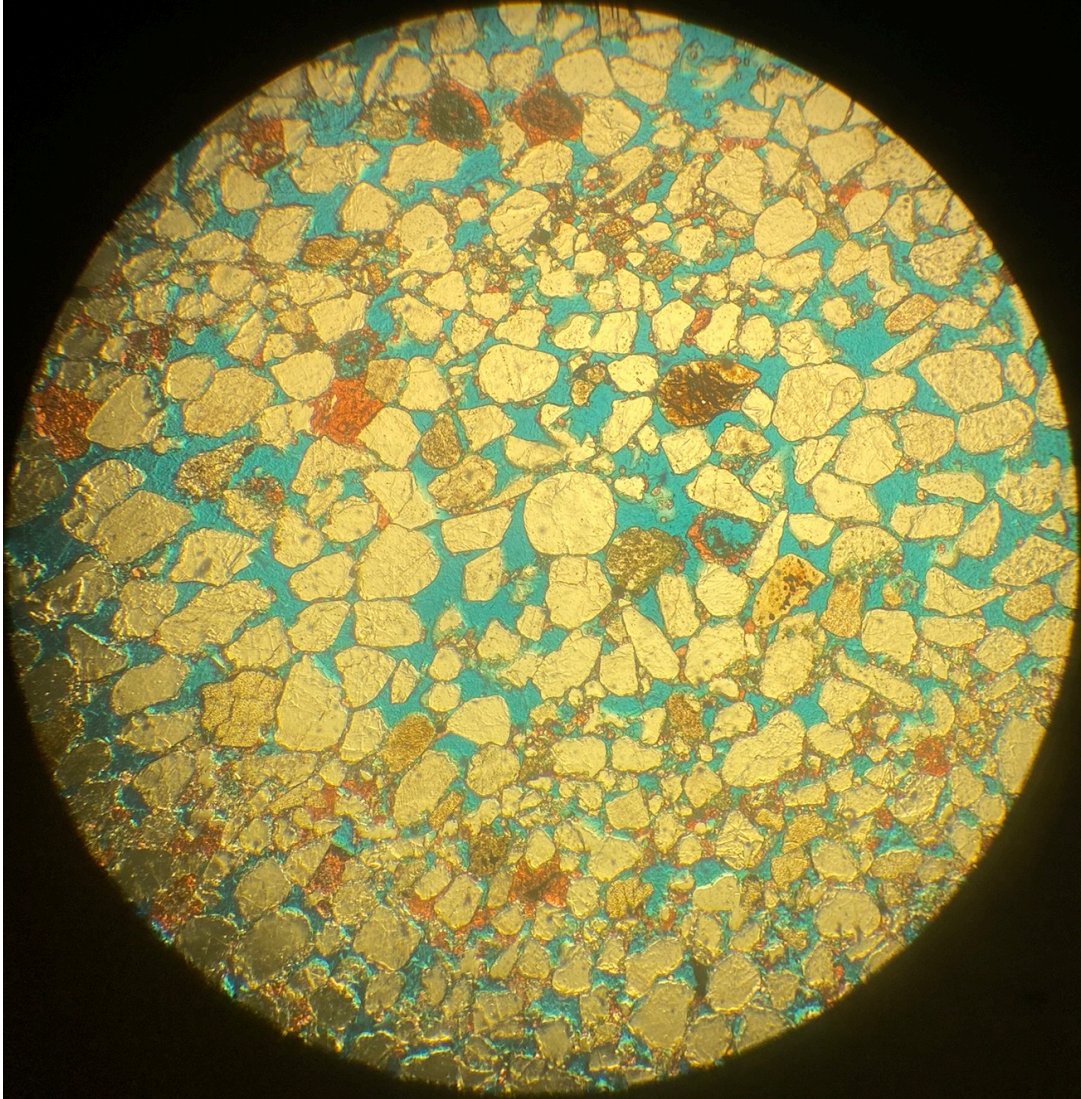
BB3N



PPL

- Possible elongated mica grain
- “Mud clasts” enclosed within drusy calcite cement
- “Syntaxial overgrowth cement” with fractures that don’t crosscut grains outside cement
- Range of grain sizes and degree of rounding

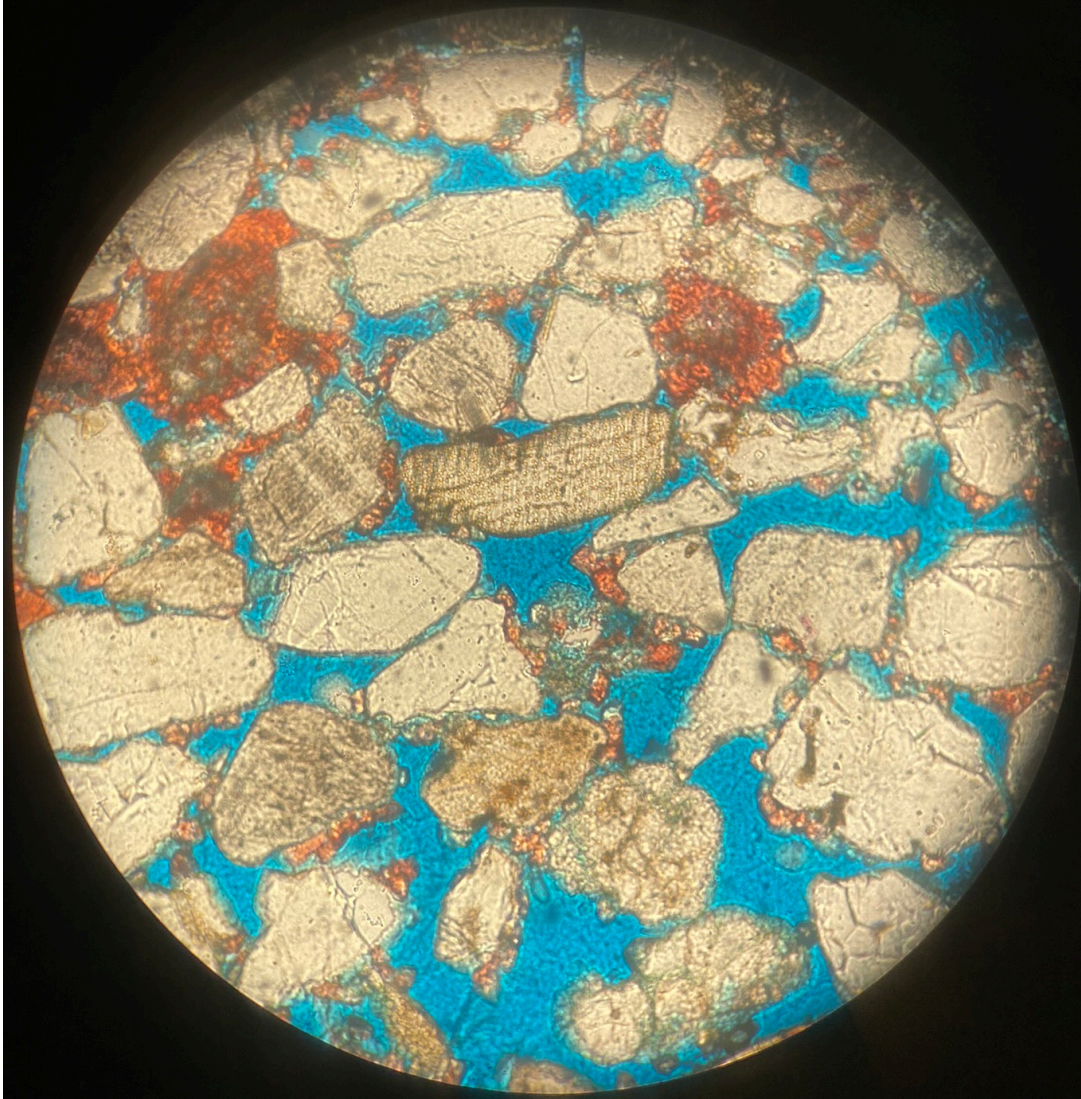
BB3N



- Range of grain sizes and degree of rounding

PPL

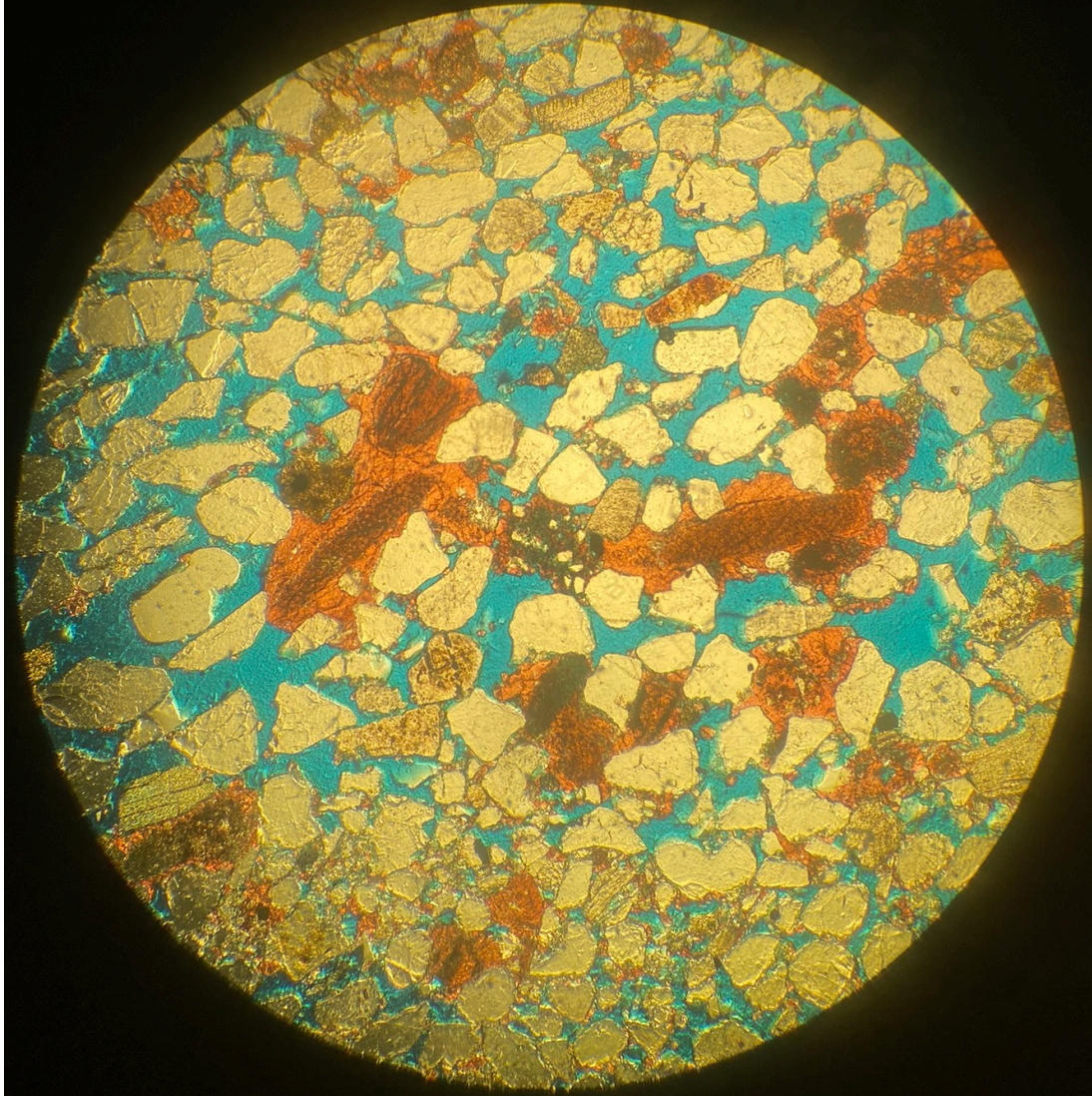
BB3N



PPL

- Weathered feldspar grain in center?
 - These elongated, subhedral grains are not uncommon
 - Plagioclase twinning obvious in some grains but not in others

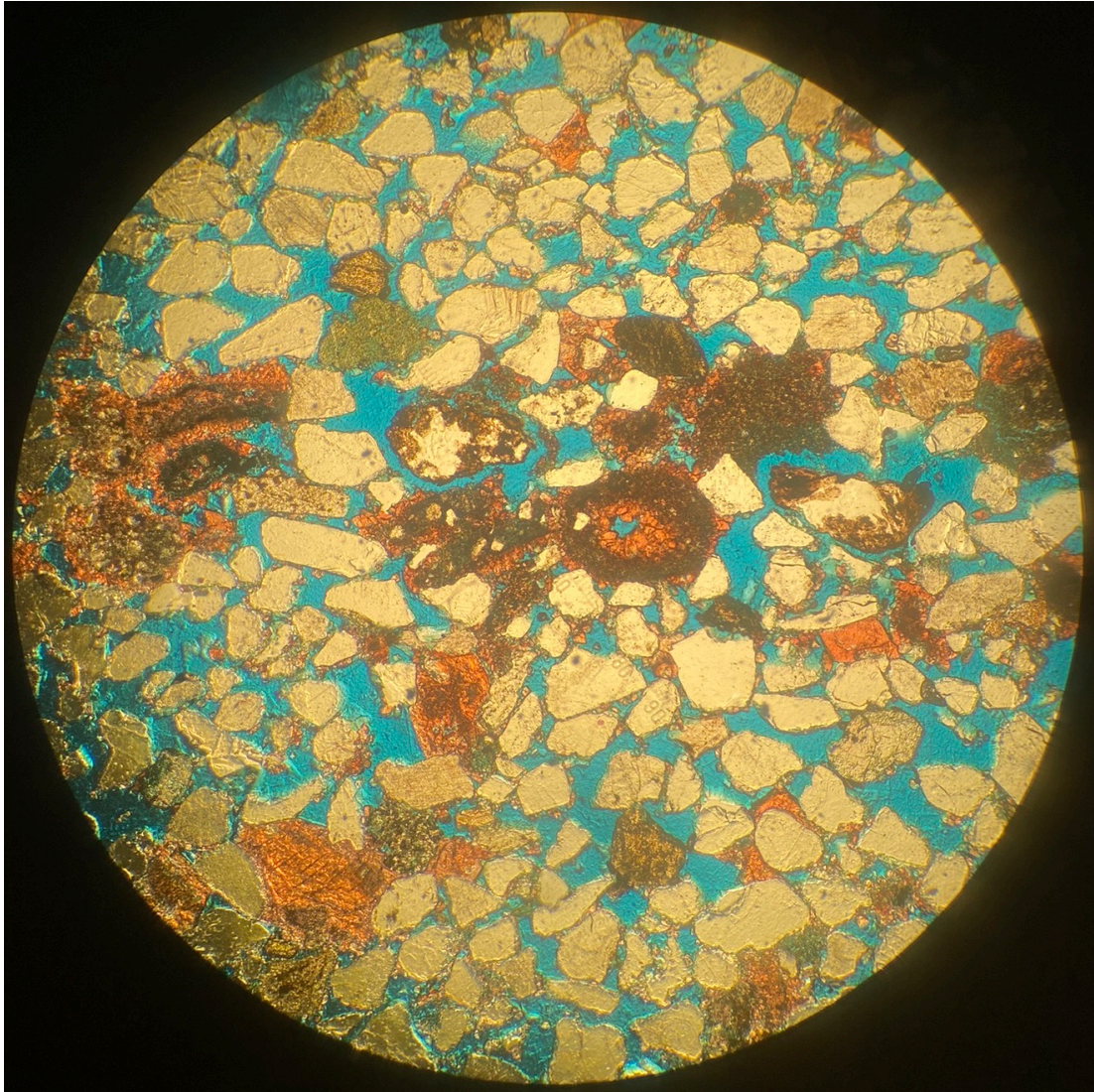
BB3N



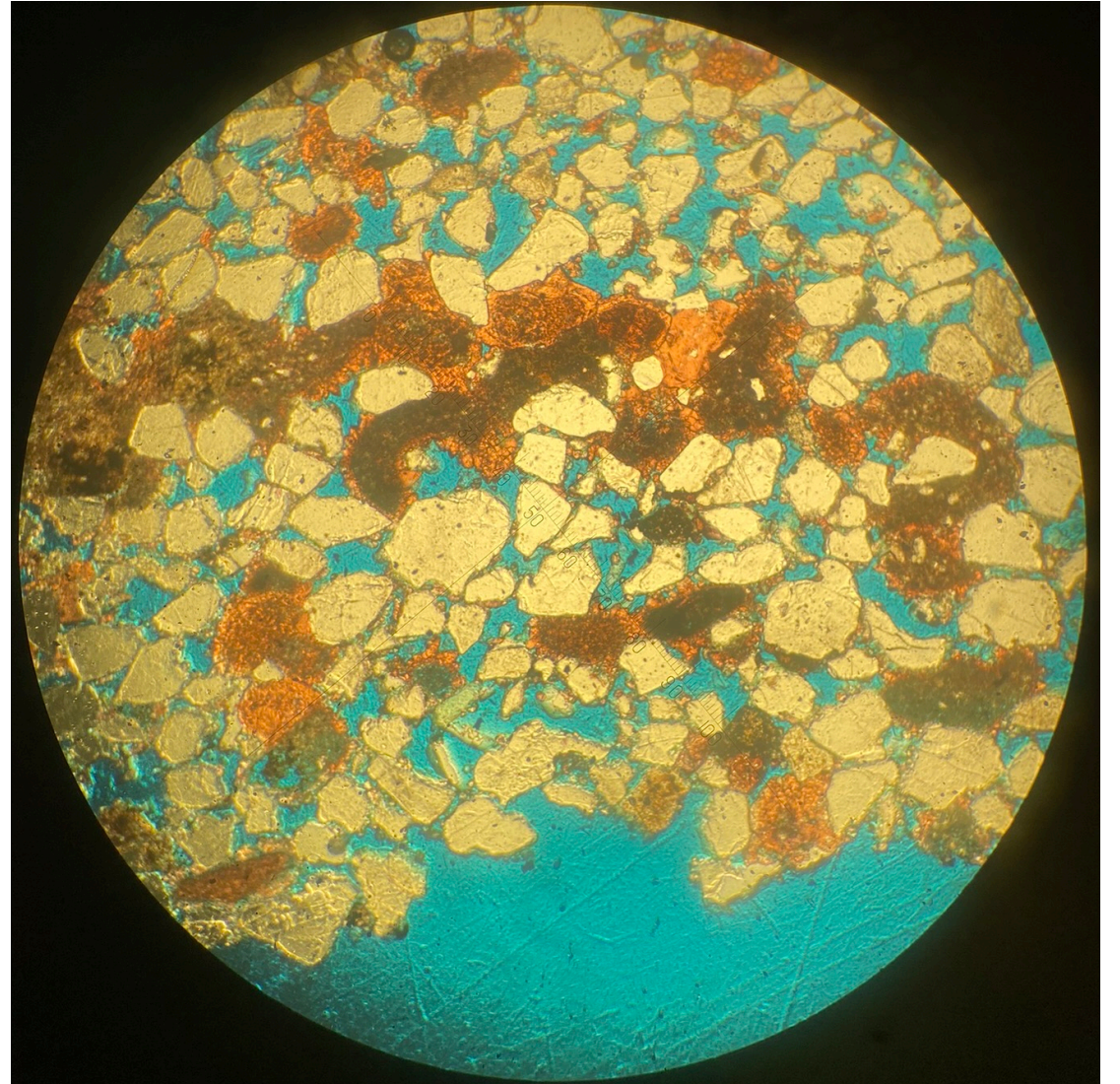
- Armored mud ball in center?

PPL

BB3N

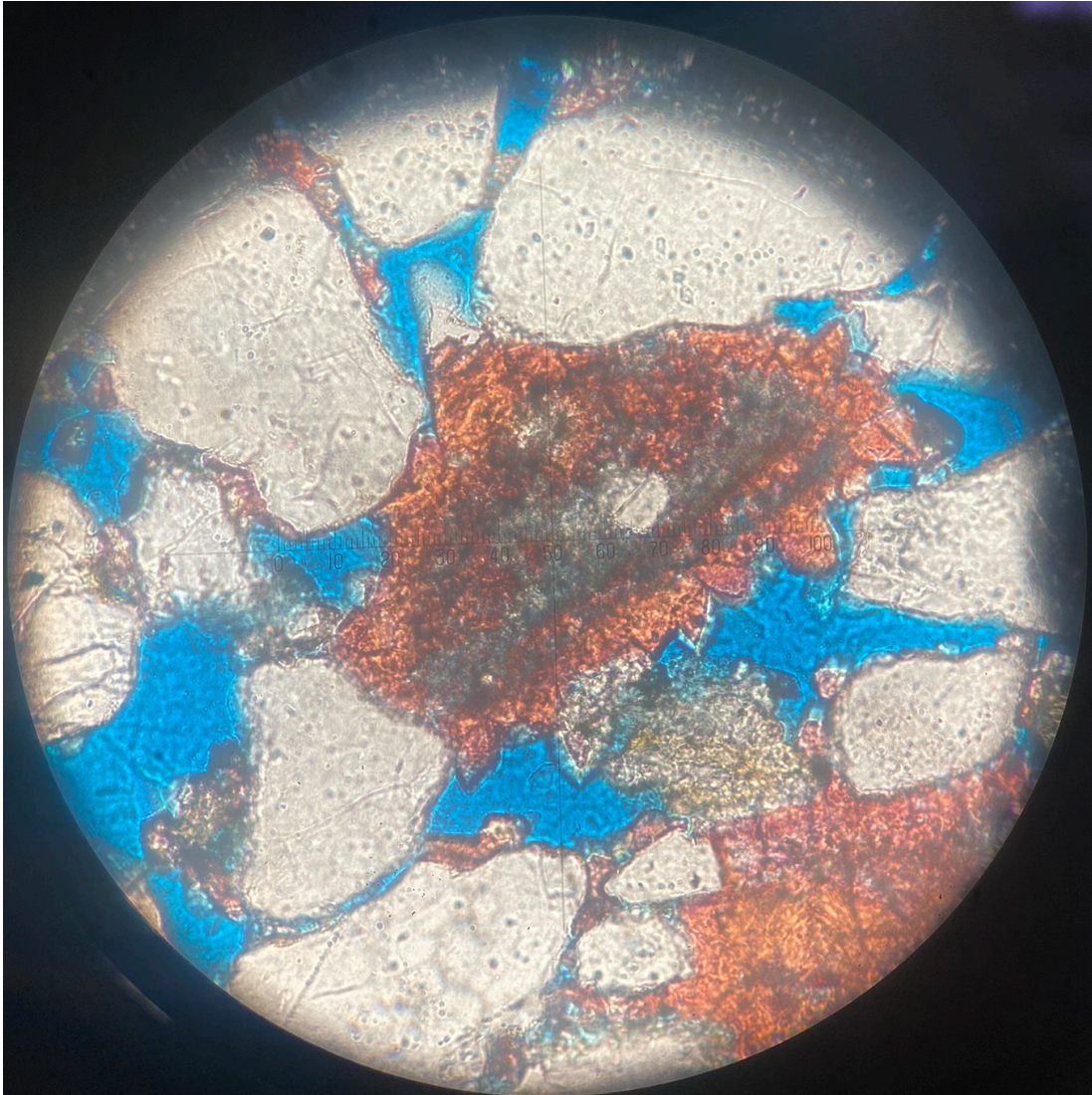


PPL



PPL

BB3N

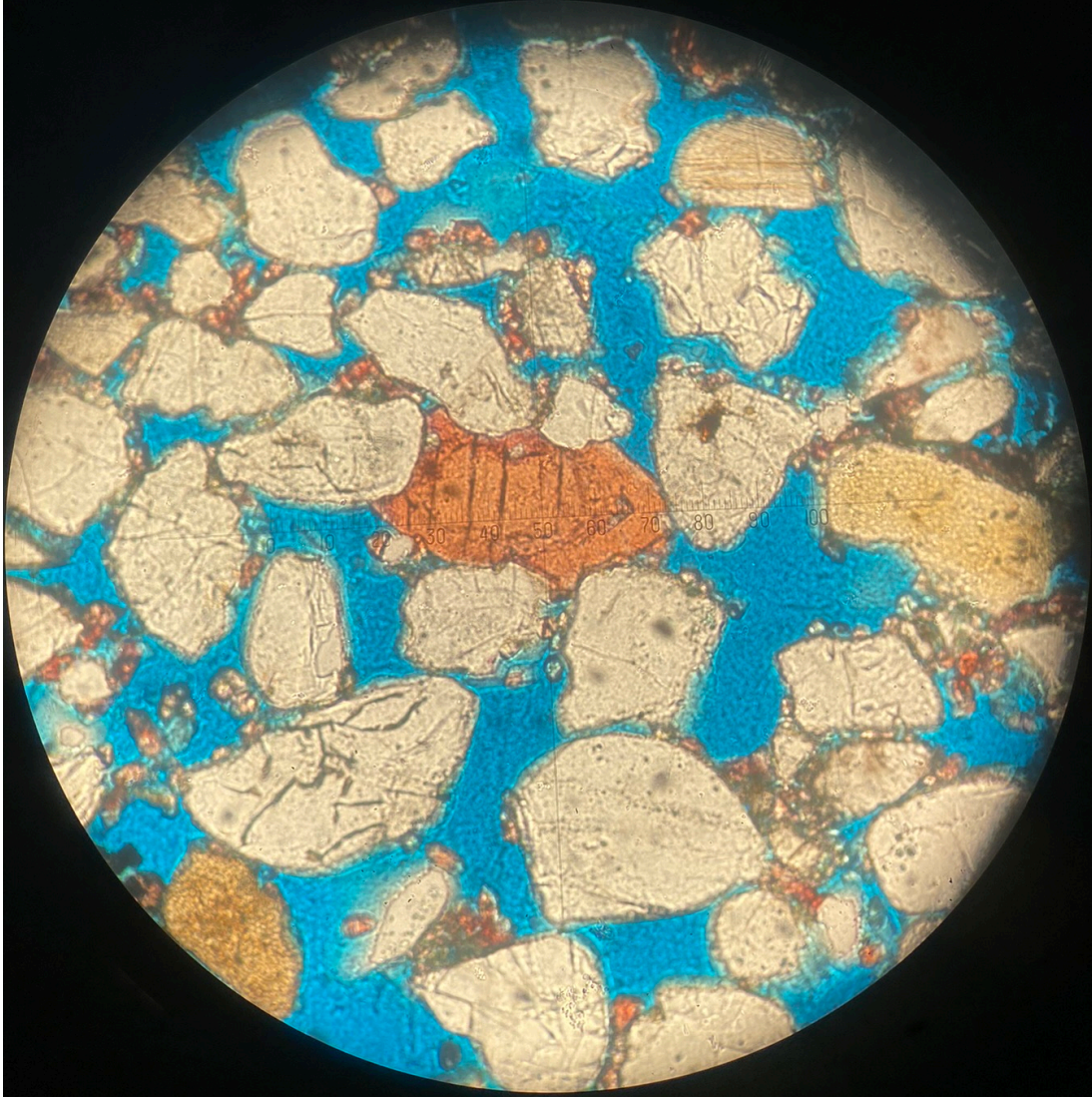


- Drusy calcite cement encircling mud rip up (?)

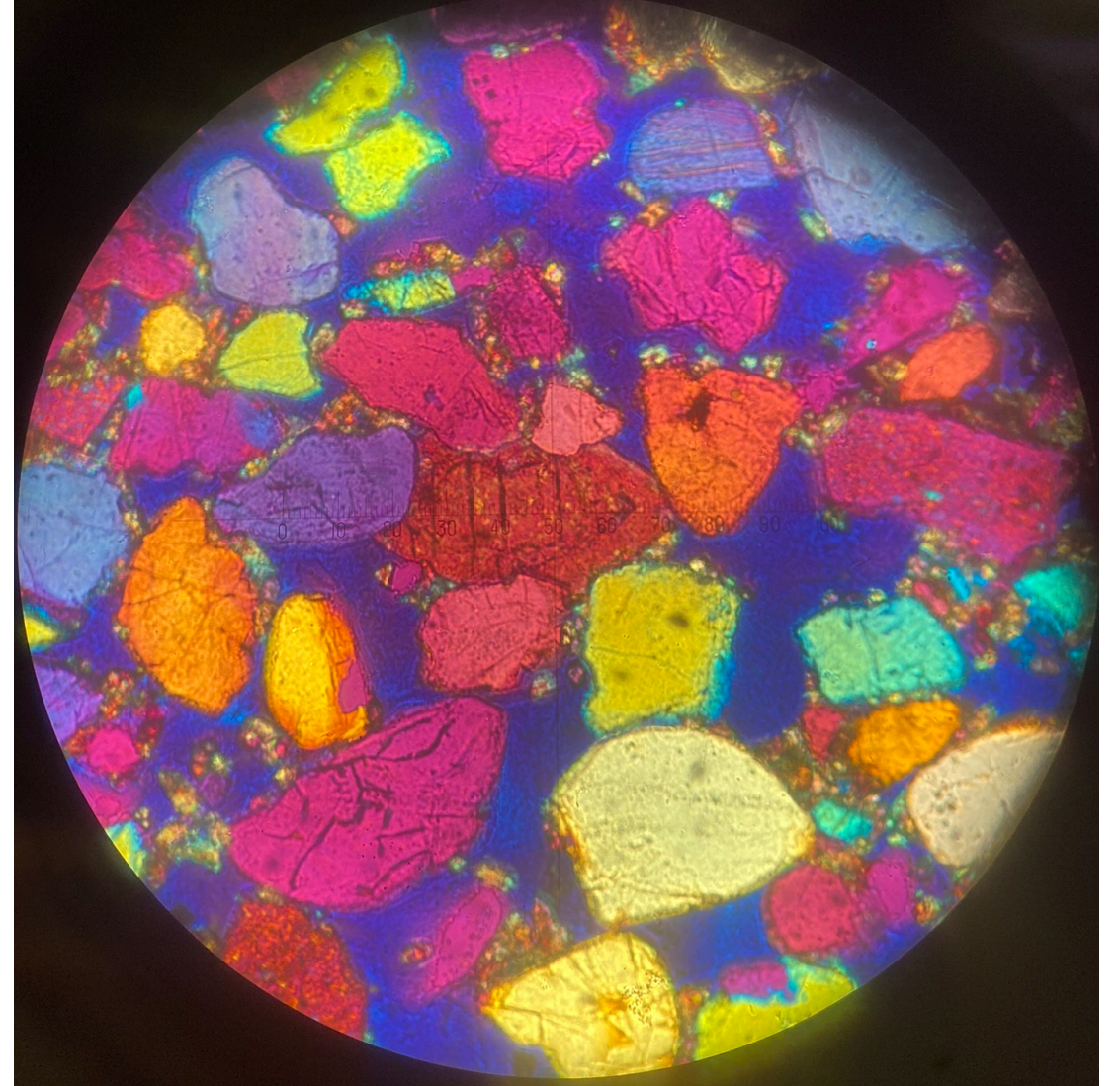
PPL

BB3N

Syntaxial overgrowth cement?
Single grain enclosed within cement
Grain and cement in optical continuity
Fractures (?) cross-cut grain and cement



PPL

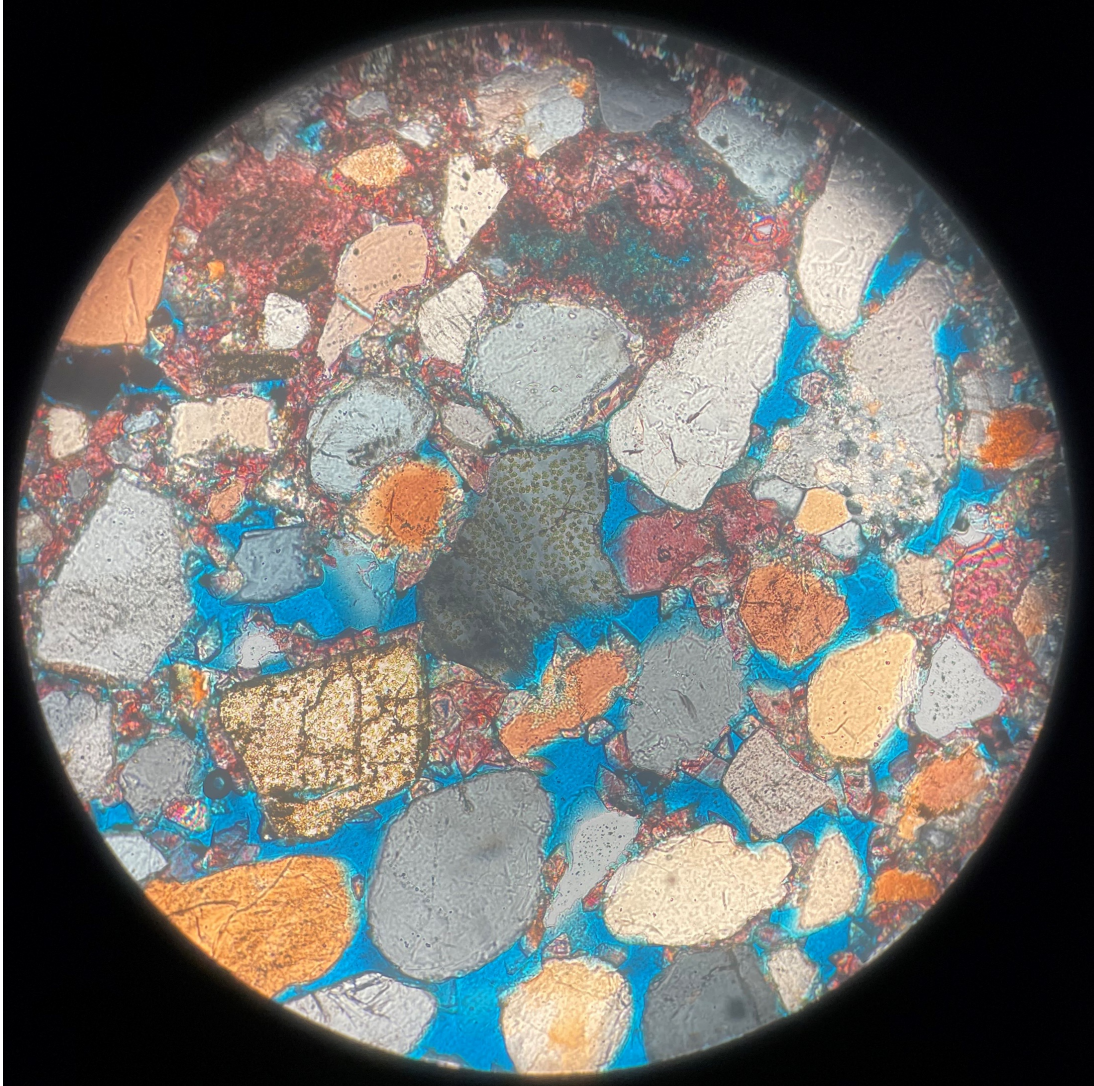


XPL

BB3 RL

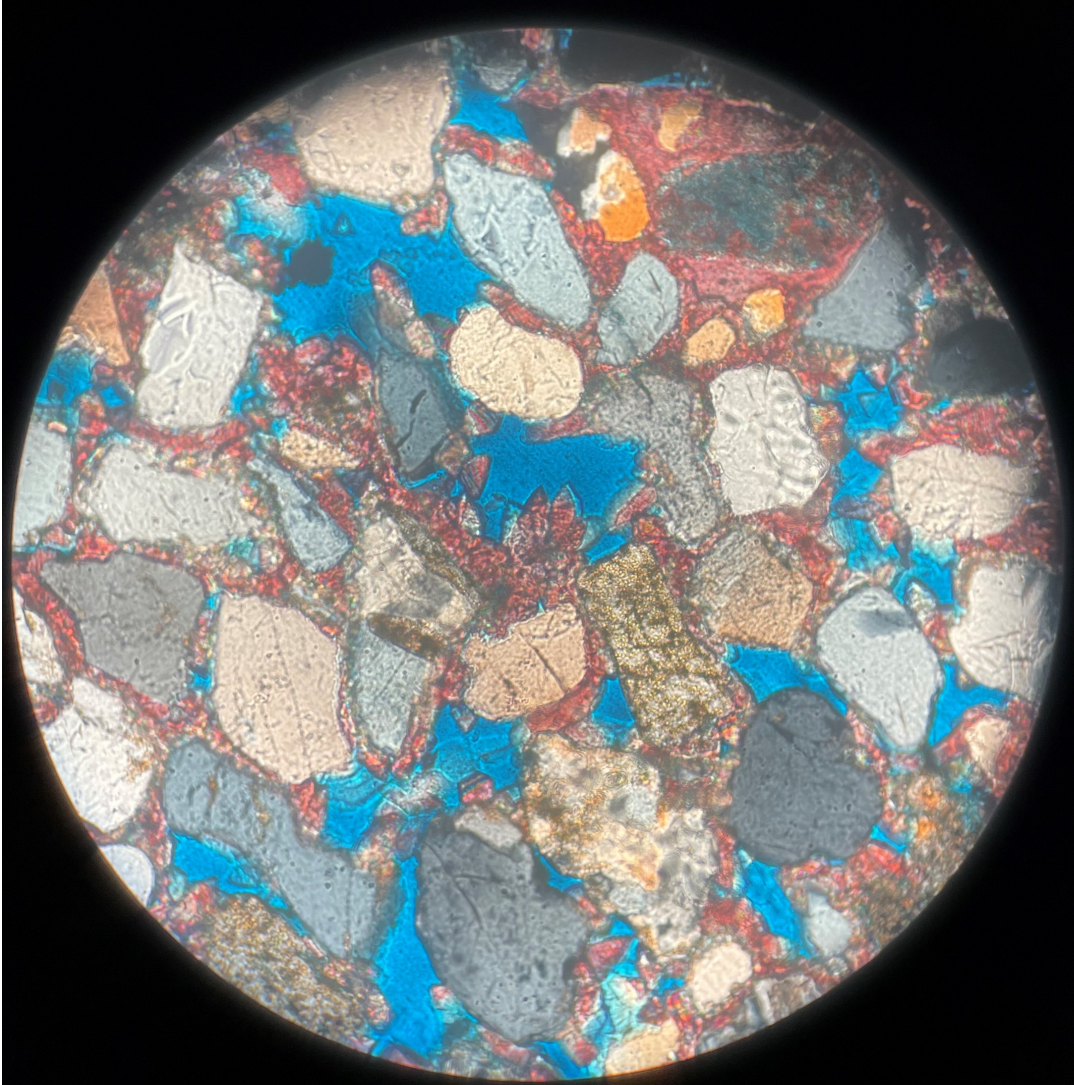


XPL



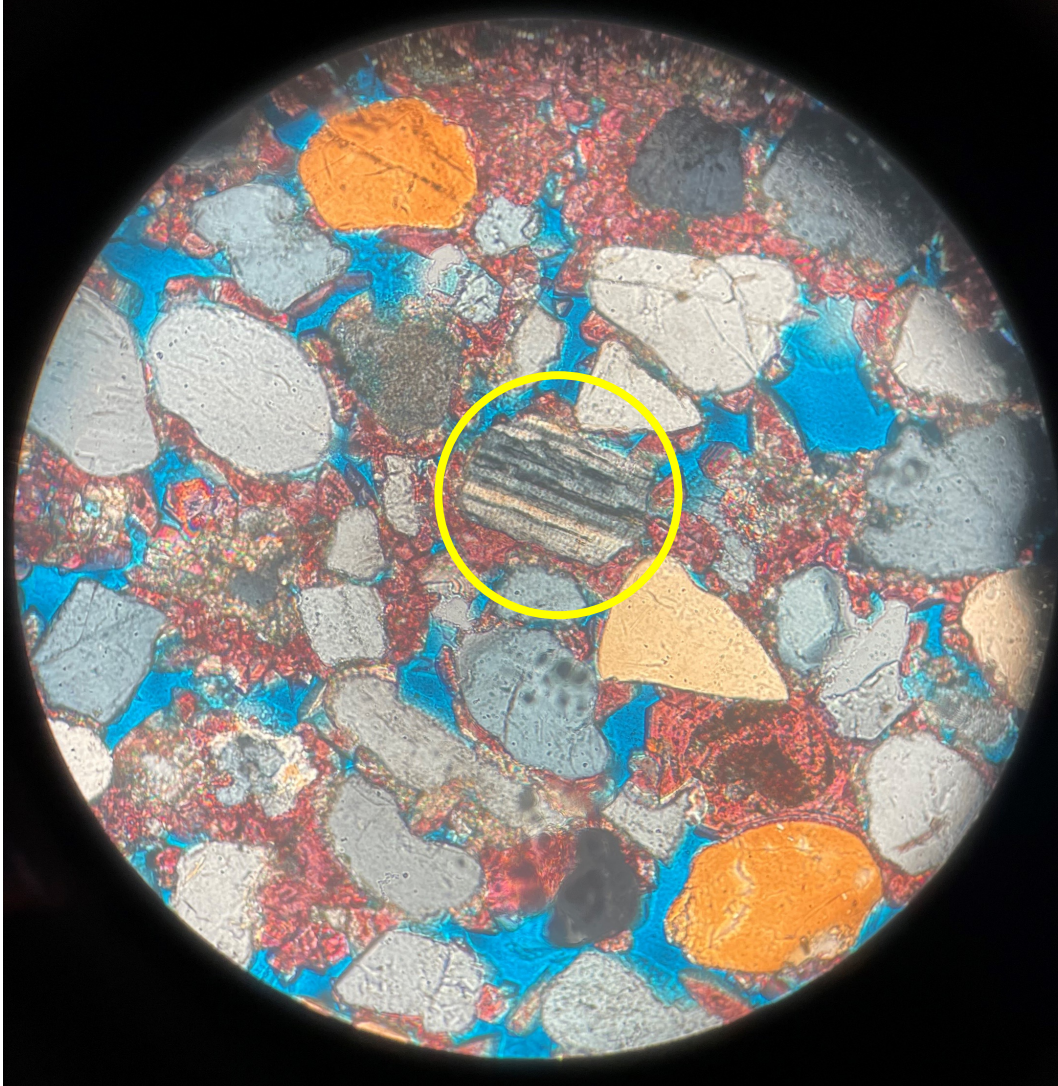
XPL

XPL



XPL

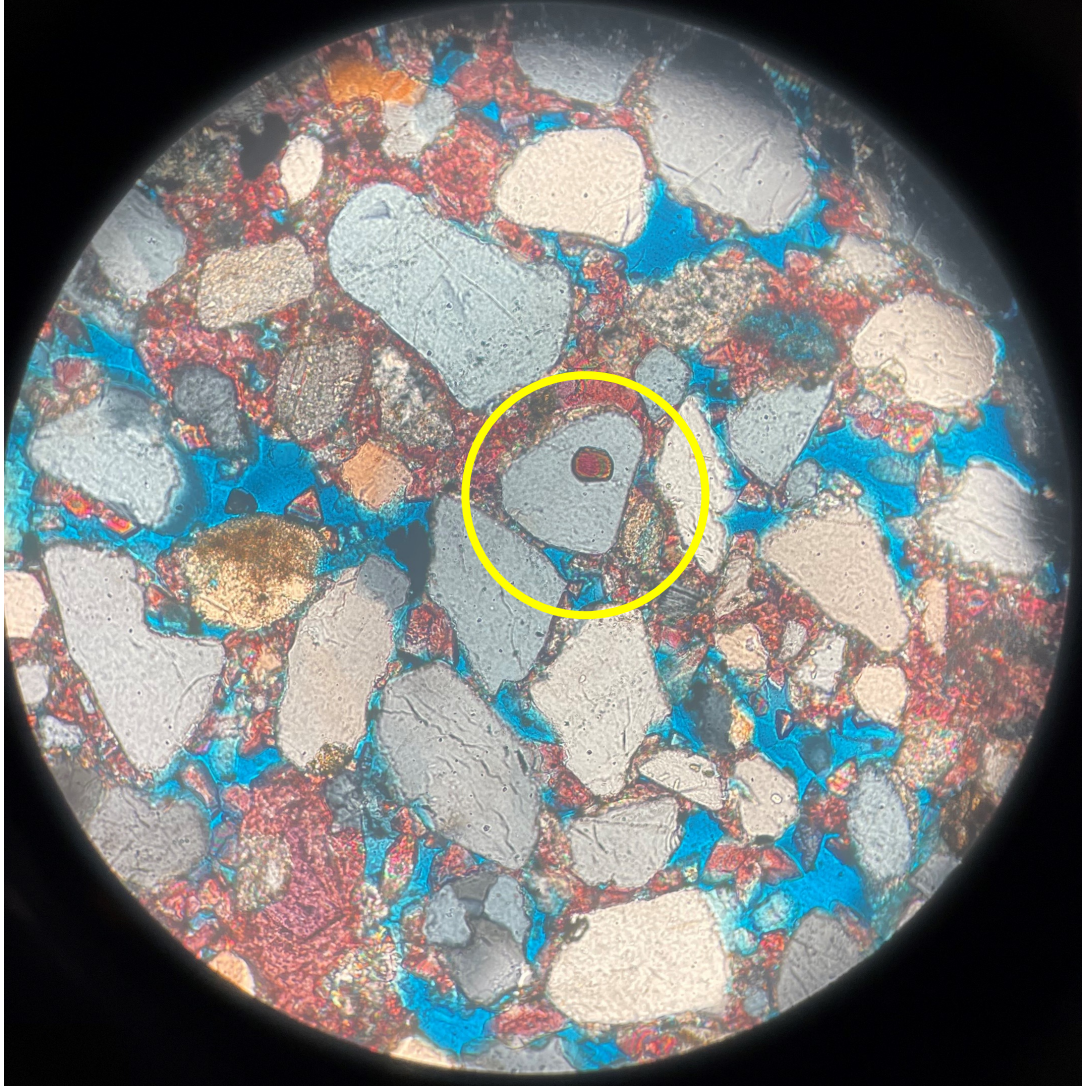
BB3 RL: XPL



XPL

- Alignment and elongation of quartz crystals
 - Metamorphosed quartz
 - Bedded chert?

BBB3 RL: Inclusion in quartz?

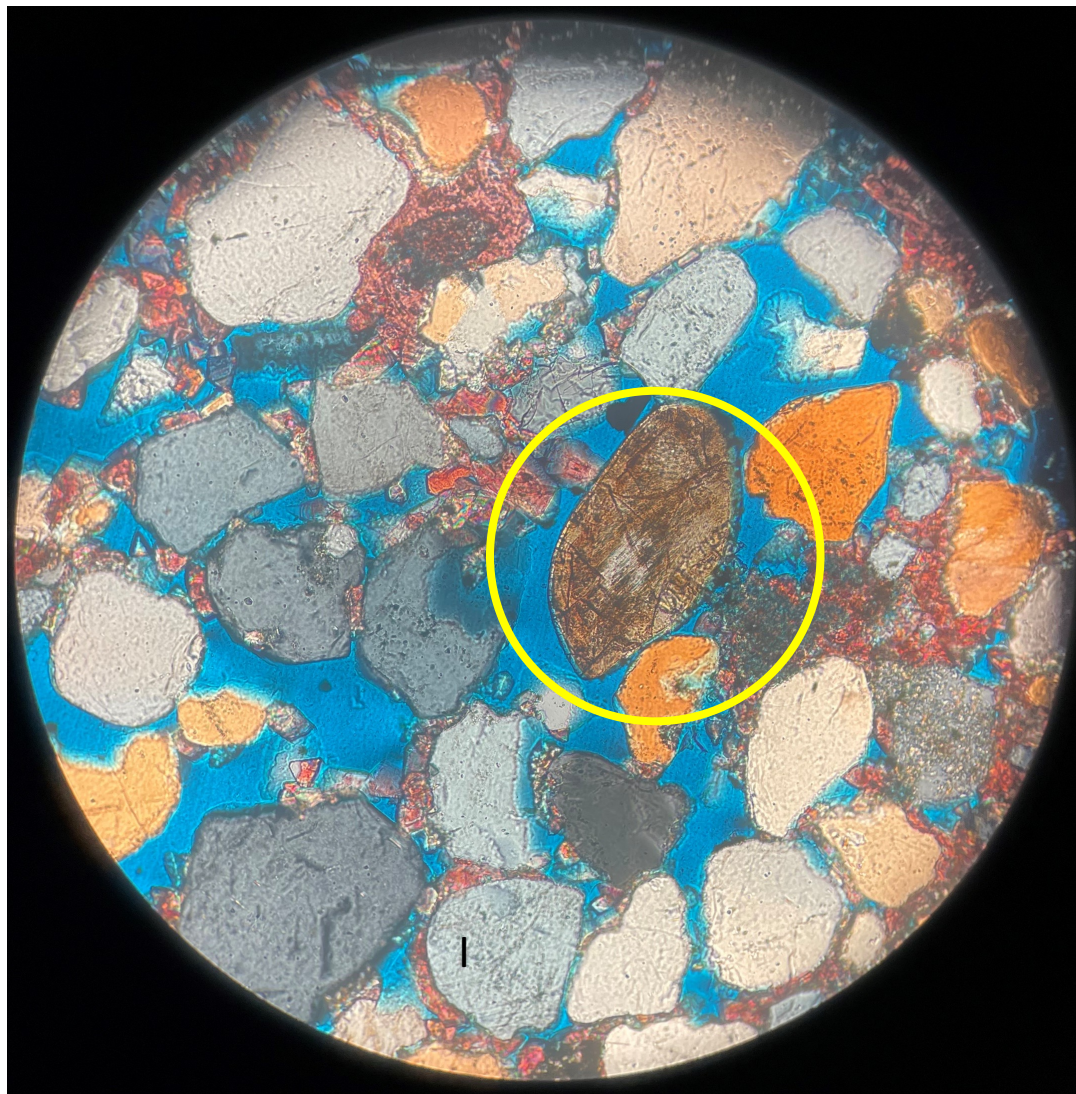


- Zircon?

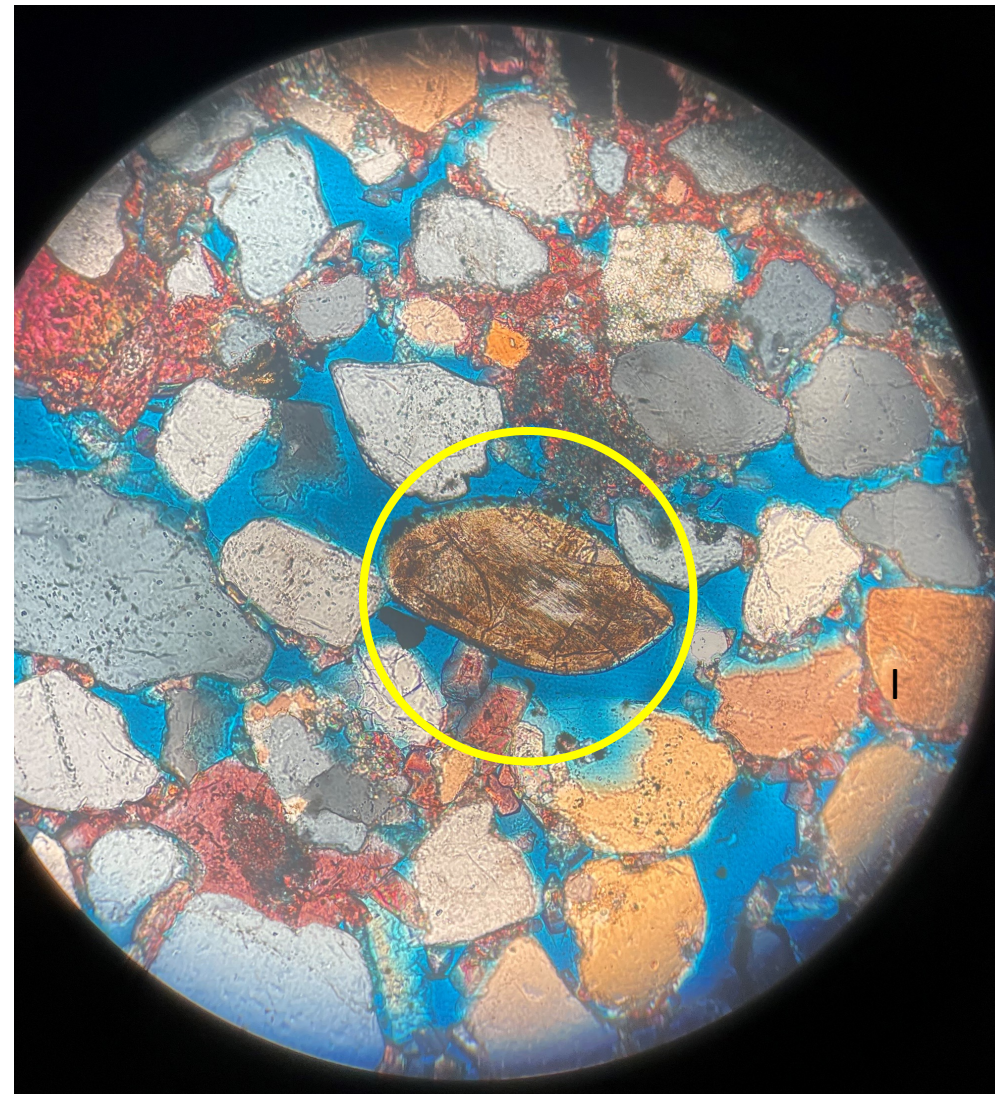
XPL

BB3 RL

Extinction does not change for the grain circled yellow
I – quartz grain (?) with needle-like inclusions

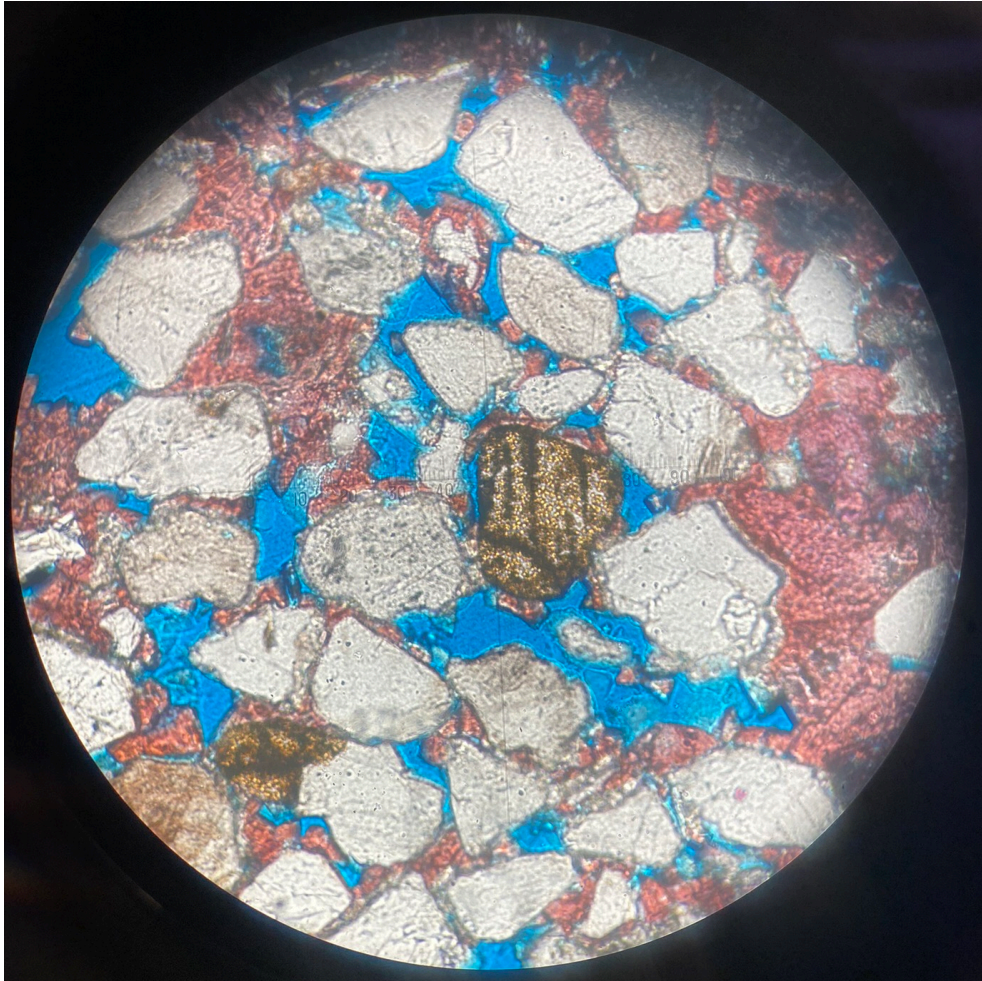


XPL



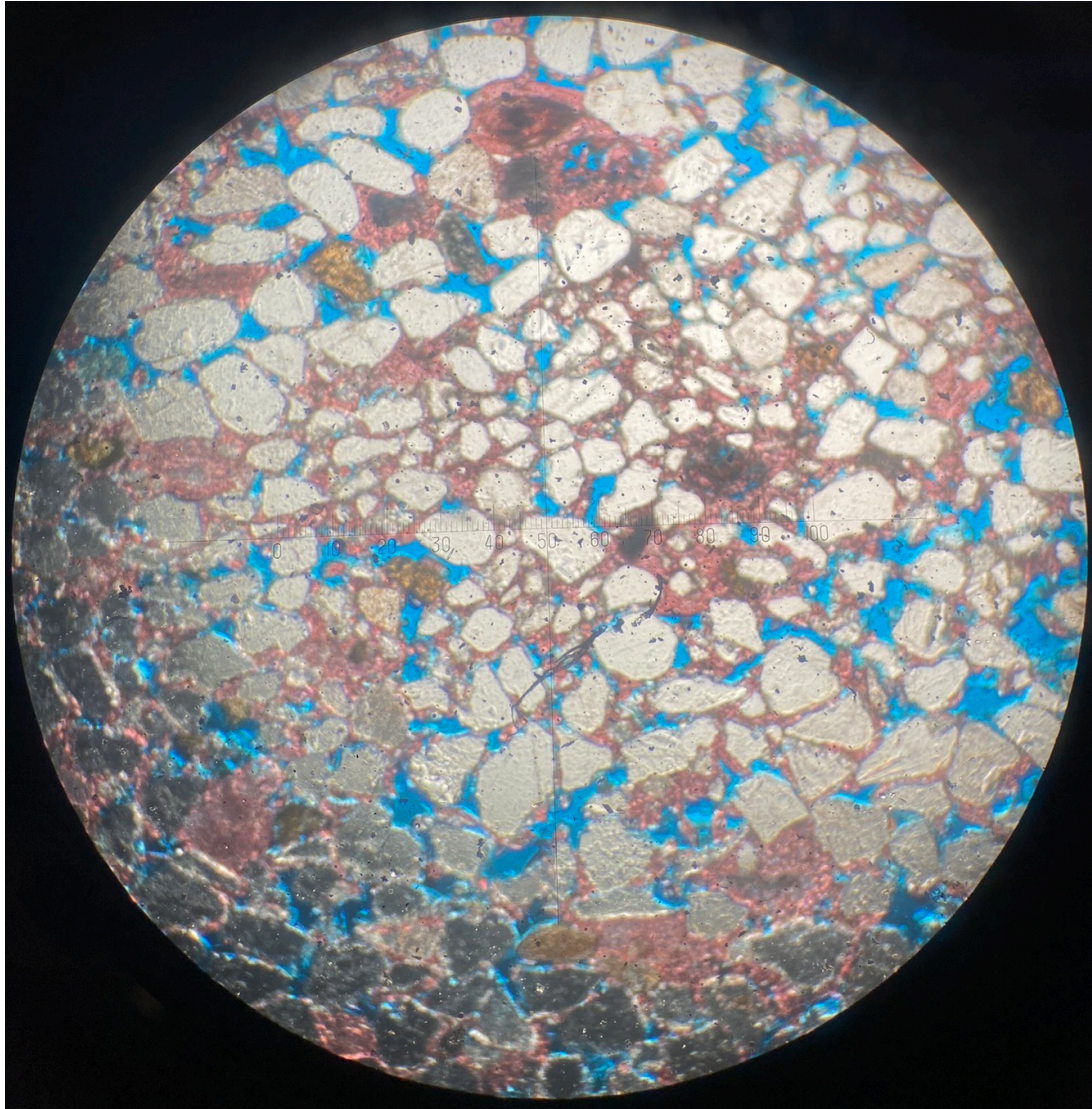
XPL

BB3 RL: Unidentified grain



PPL

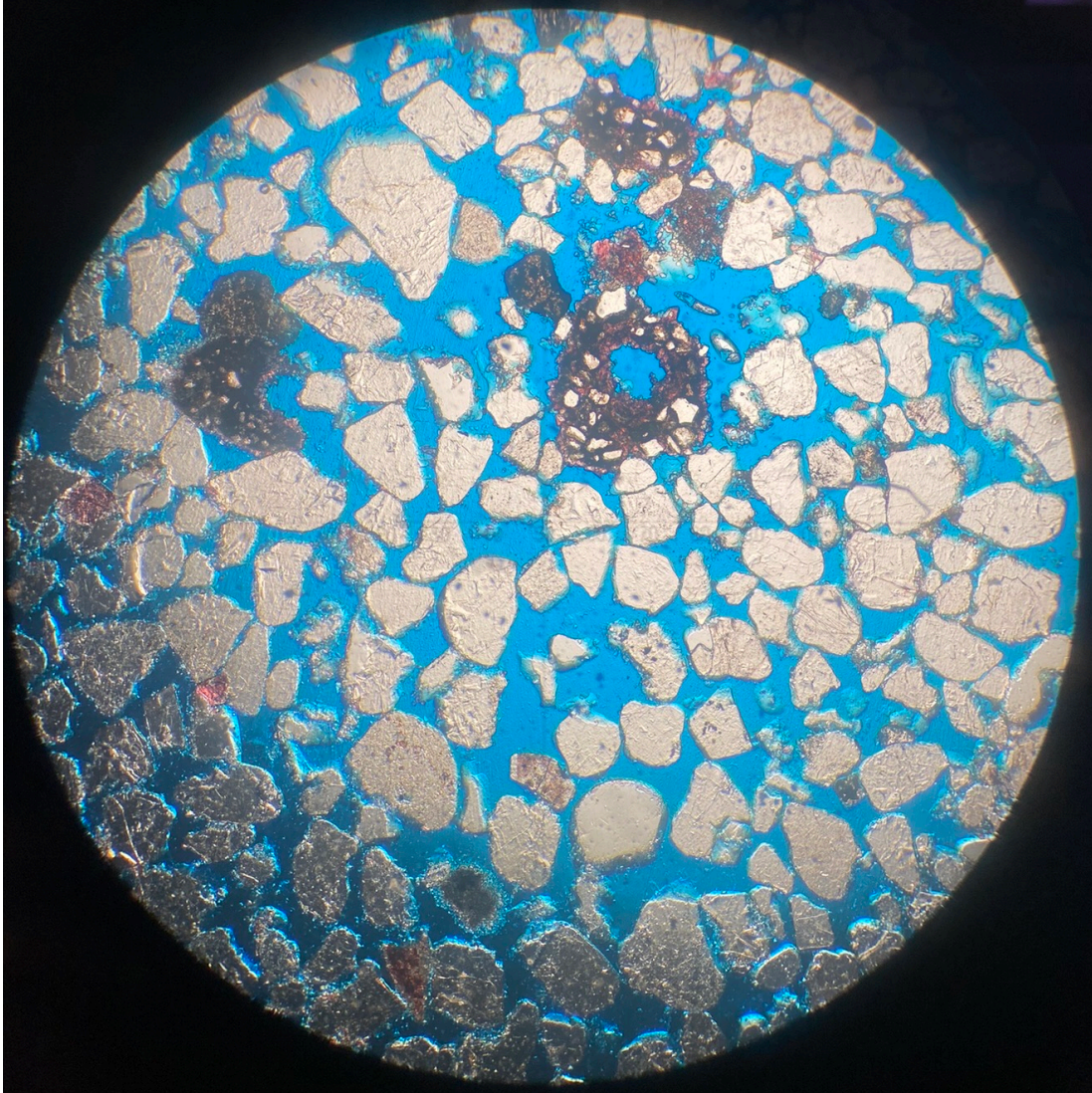
BB3 RL



- Relatively greater amounts of cement

PPL

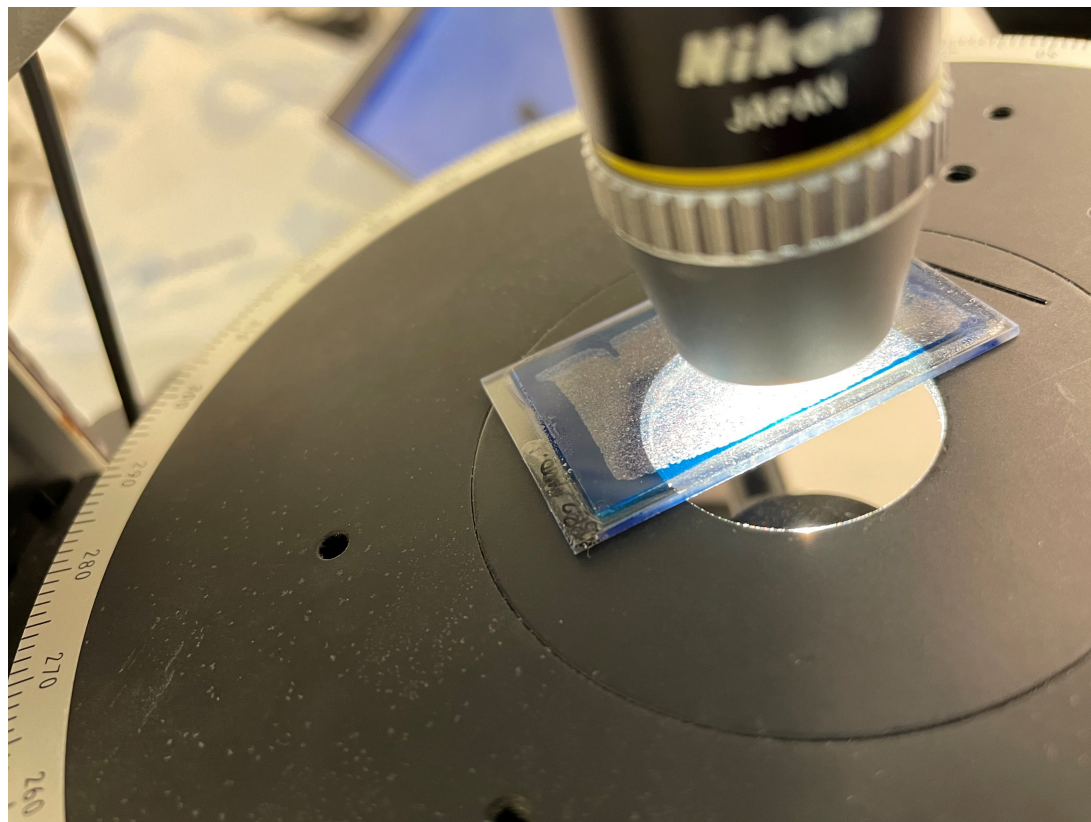
Unknown



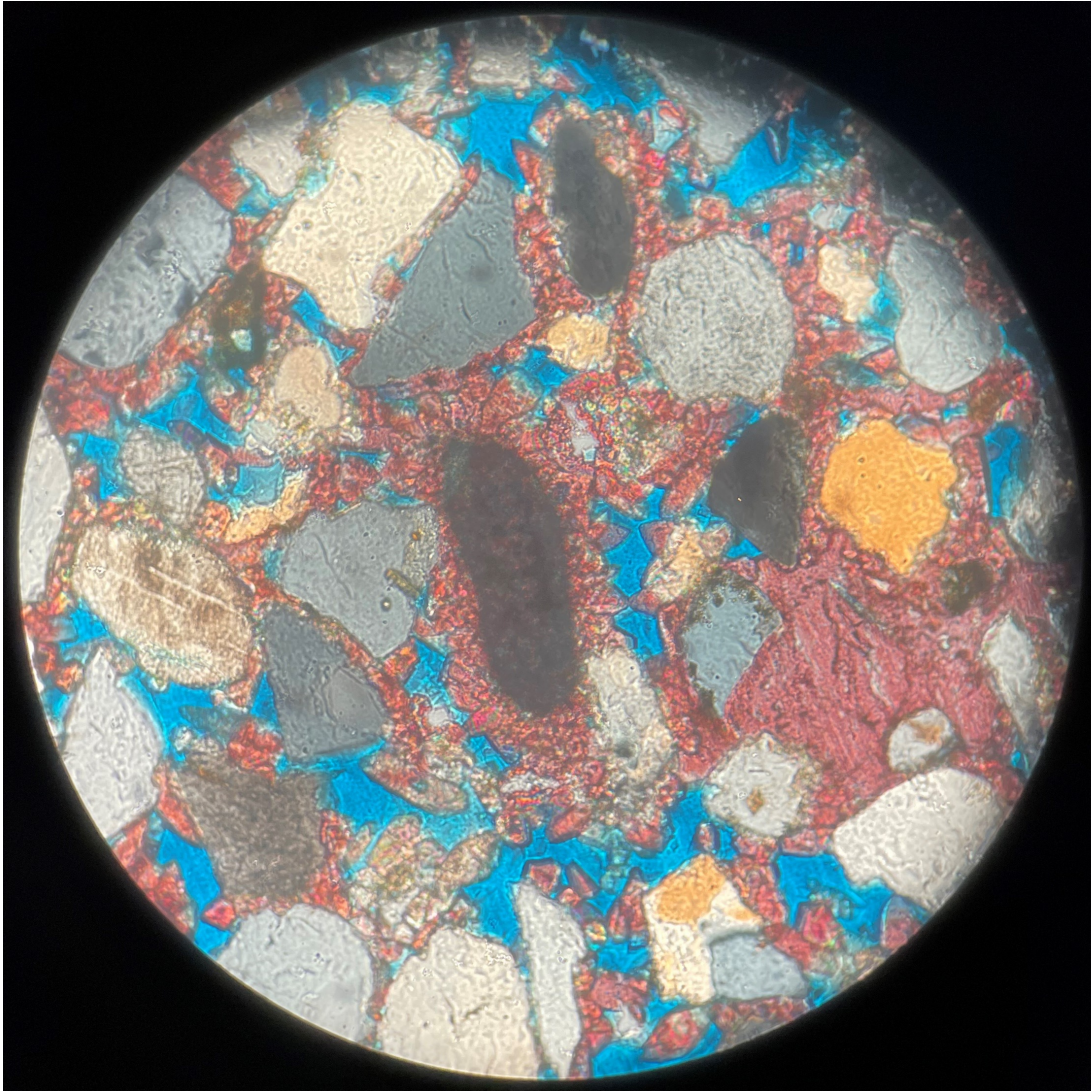
- Armored clay donut with finer-grained quartz sand inclusions
- Virtually cement-free/unconsolidated

PPL

BB2 Mid



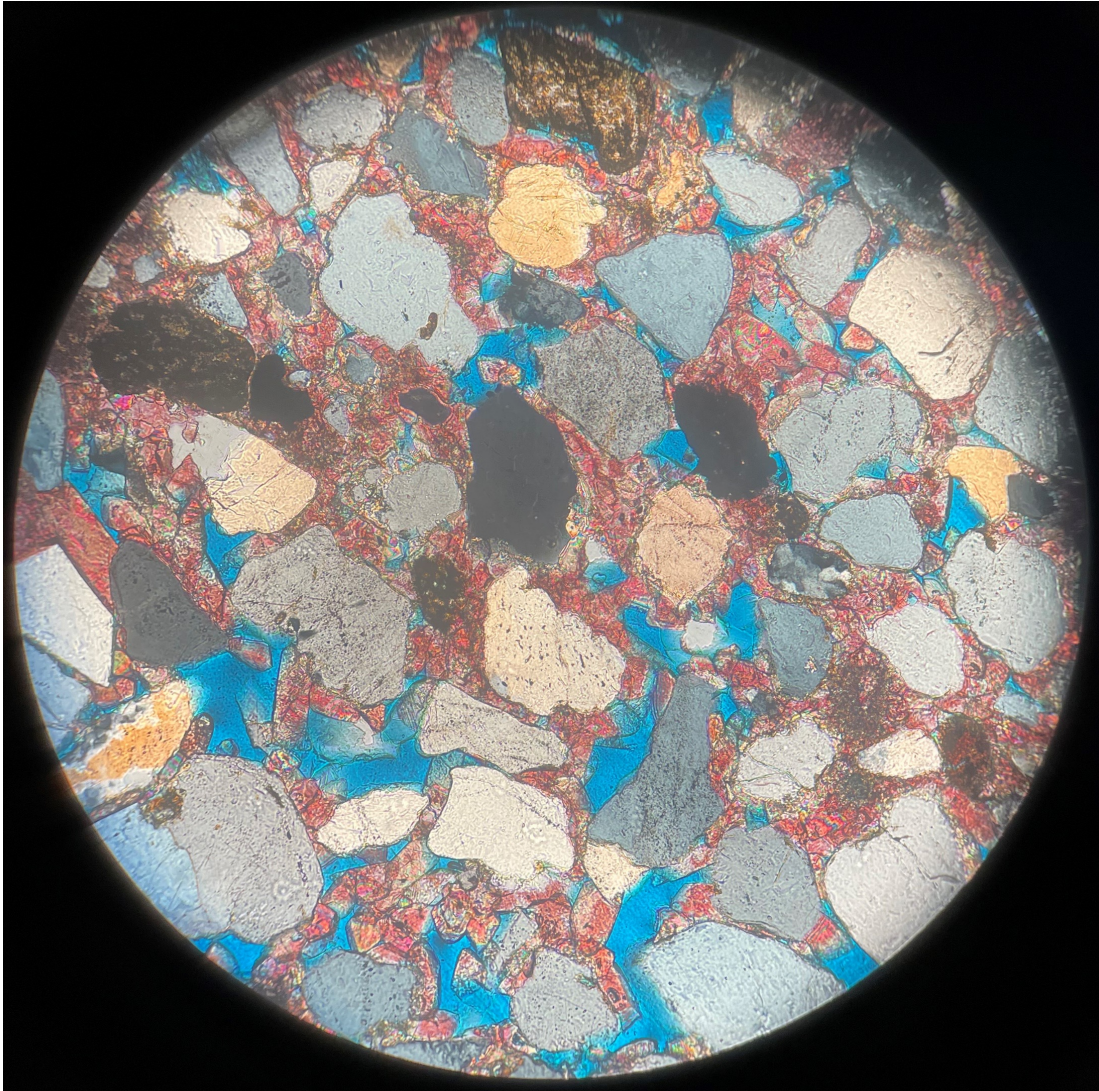
BB2 Mid: Unidentified grain - XPL



- Generally much more cemented than other slides

XPL

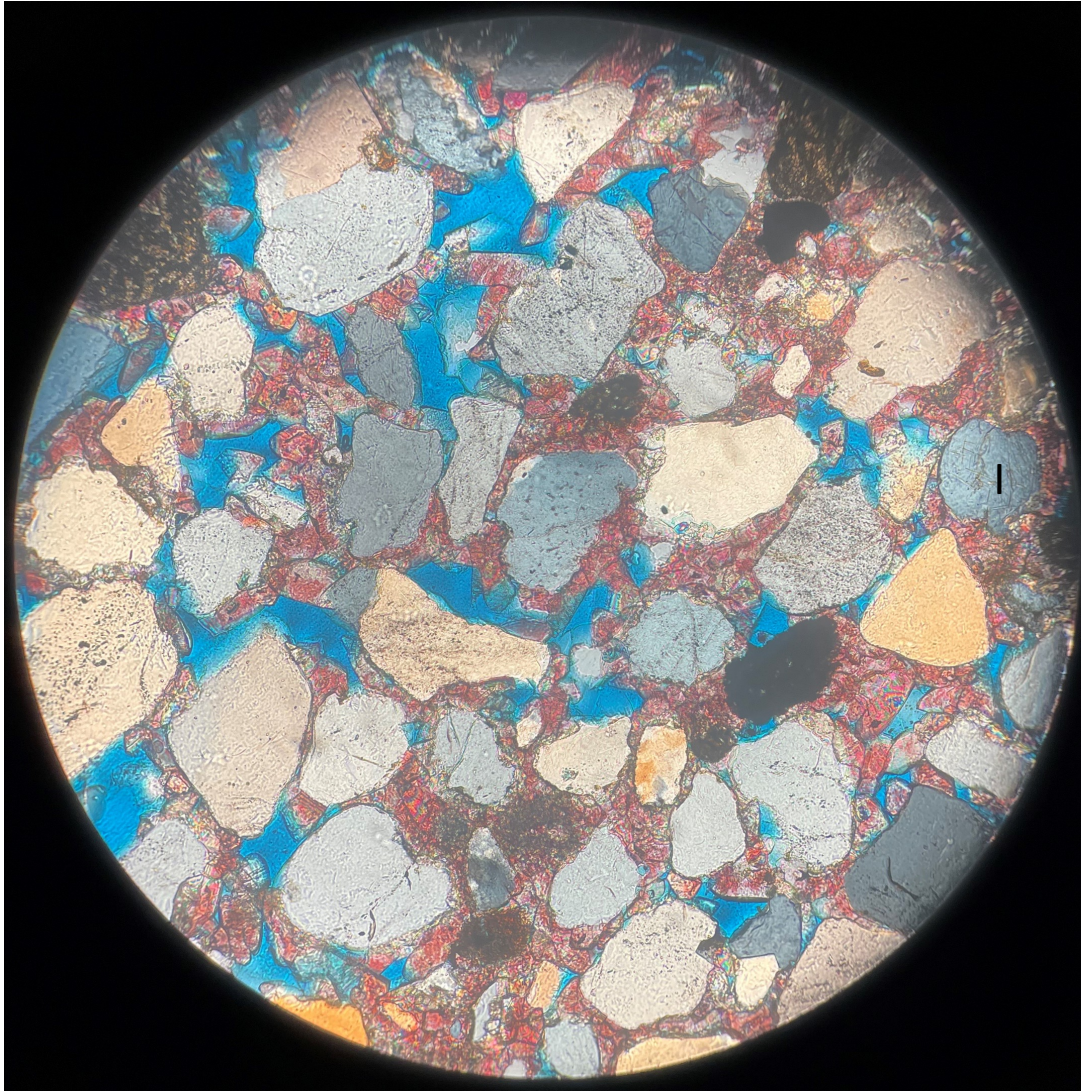
BB2 Mid: Unidentified grain - XPL



XPL

- Generally much more cemented than other slides

BB2 Mid:

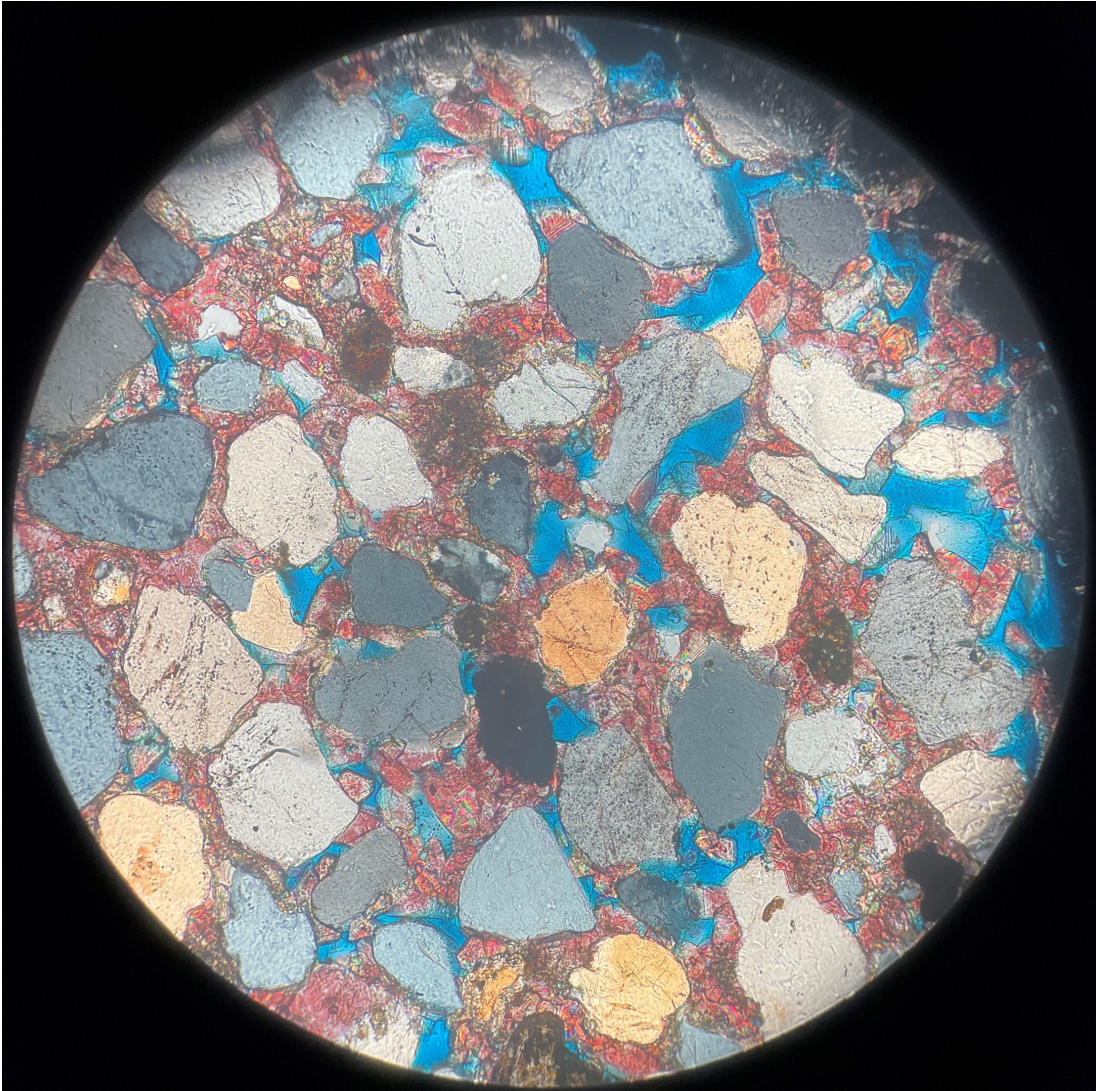


XPL

- Generally much more cemented than other slides

I – quartz grain with needle-like inclusions

BB2 Mid:



XPL

- Generally much more cemented than other slides

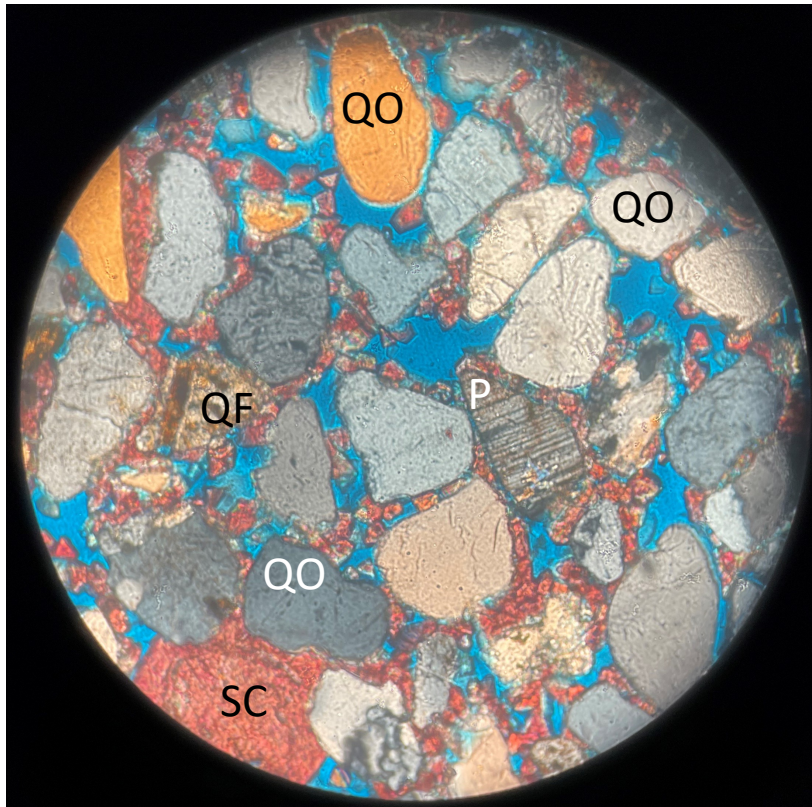
BB2 Mid

P – Plagioclase feldspar grain

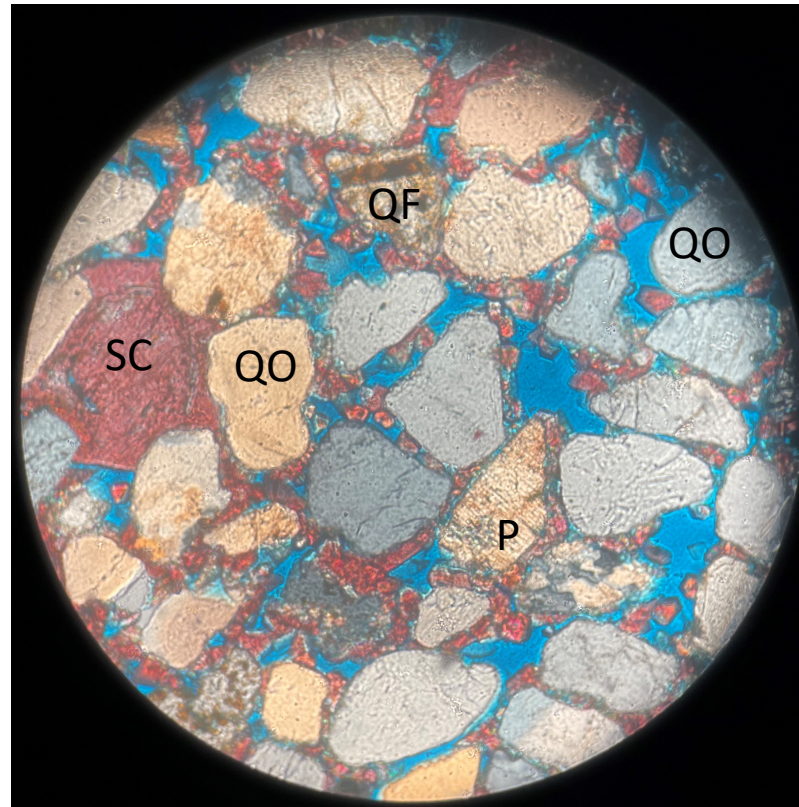
SC – Syntaxial calcite cement

QO – Quartz overgrowth cement suggesting recycled sediment

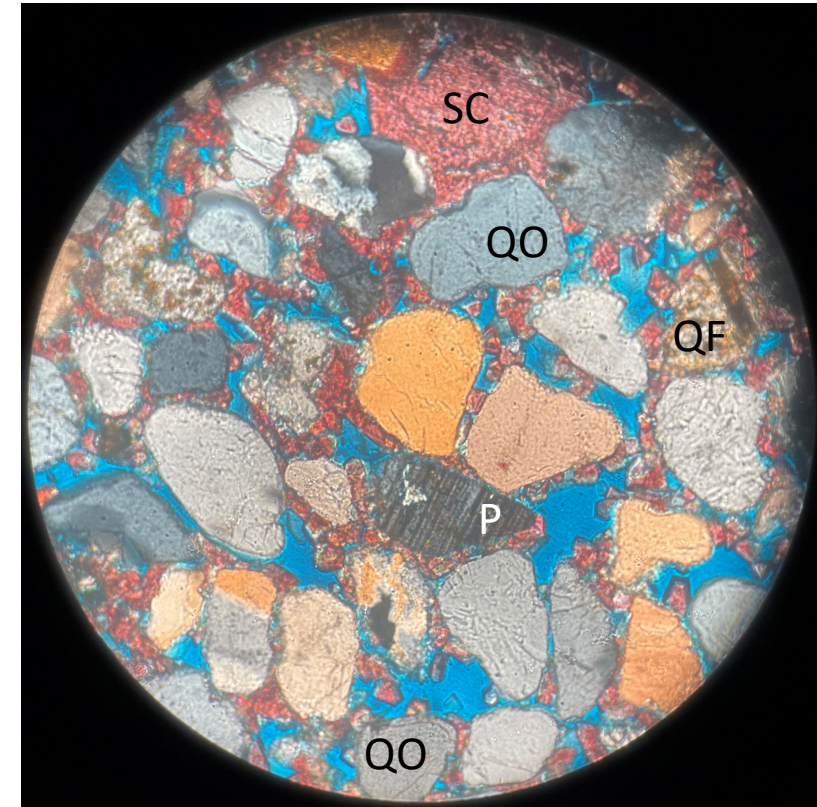
CFF – Chalcedony-filled fracture



XPL

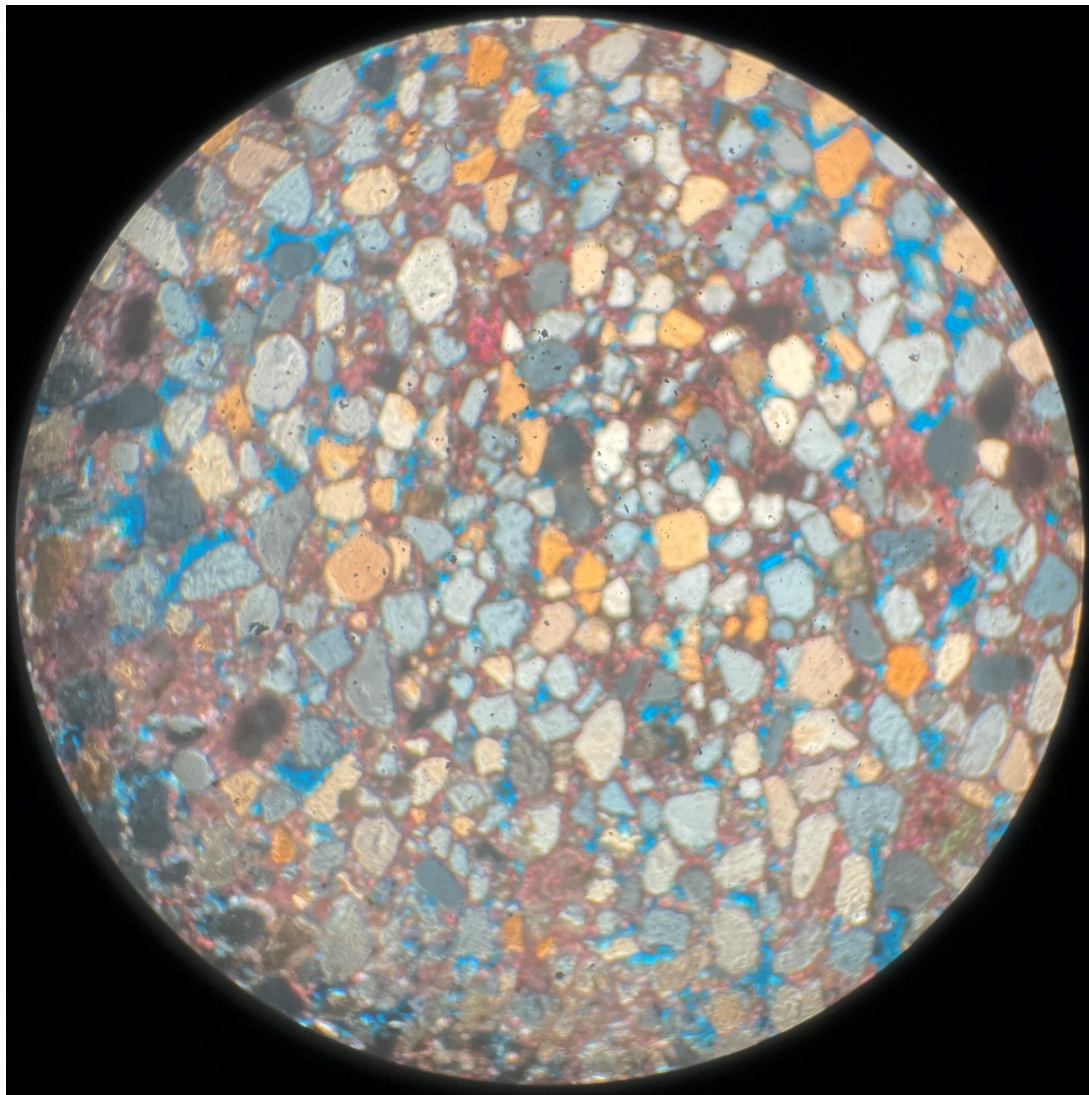


XPL



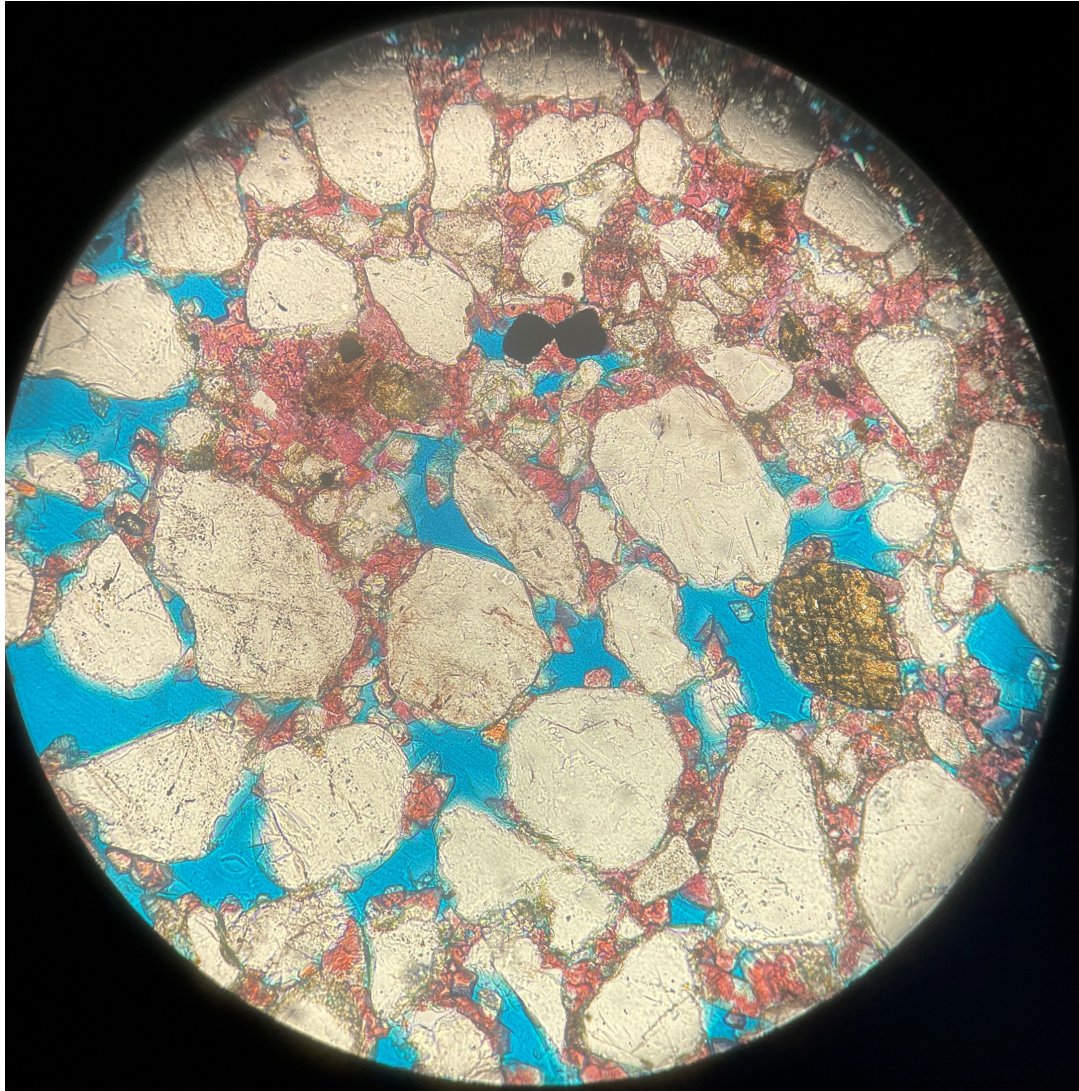
XPL

BB2 Mid: XPL



XPL

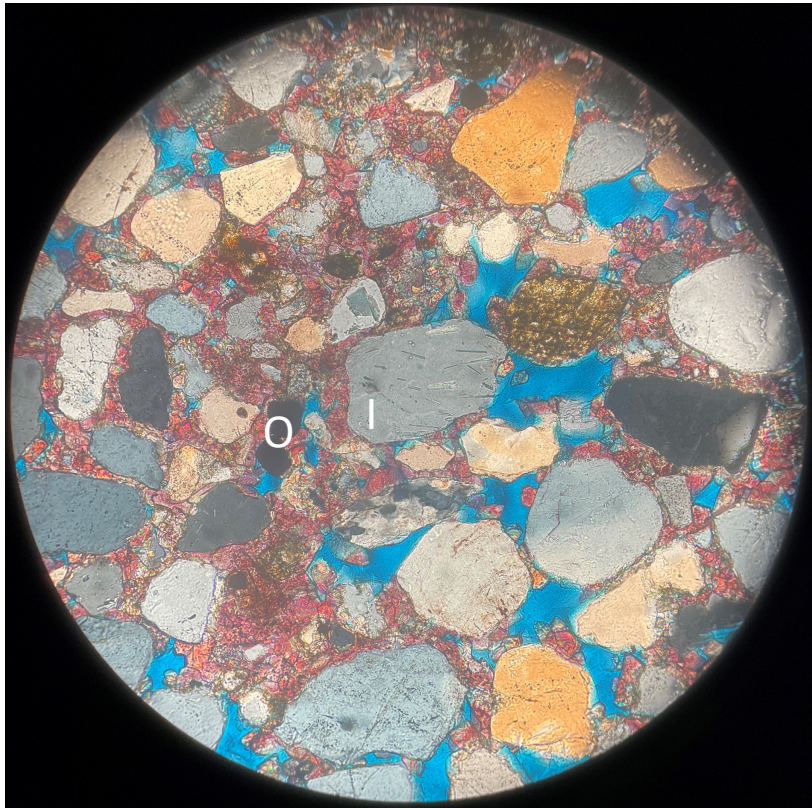
BB2 Mid: PPL



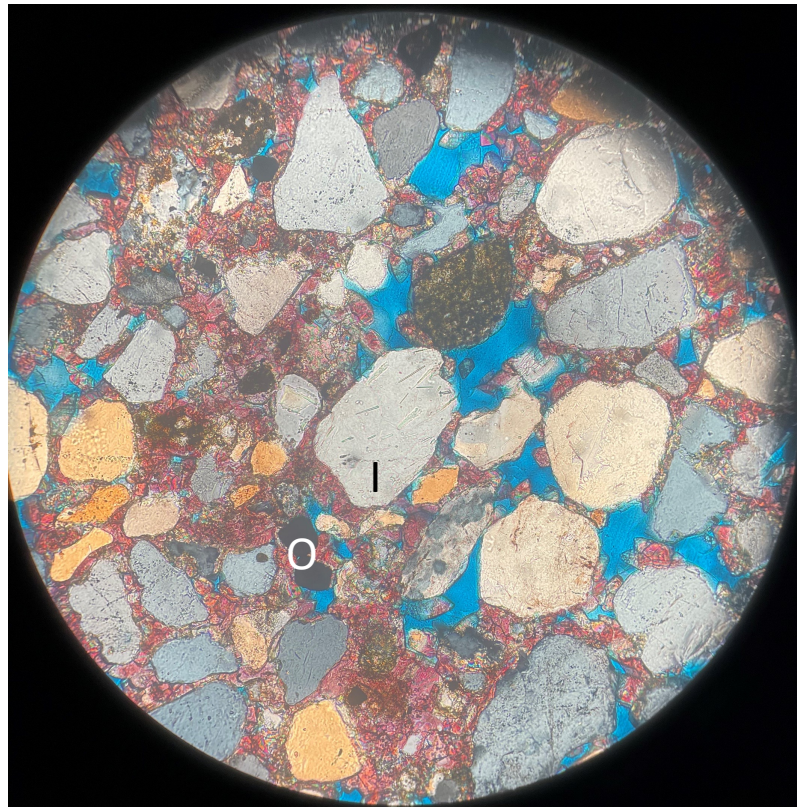
PPL

BB2 Mid

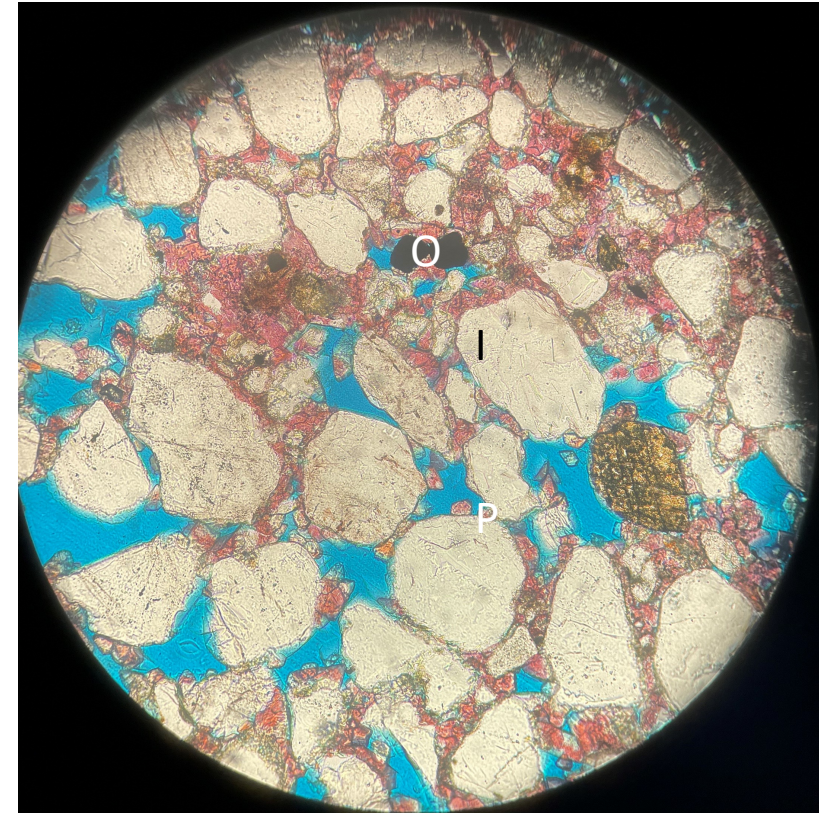
I – quartz grain with needle-like inclusions, potentially oriented
O – unidentified opaque grains



XPL



XPL



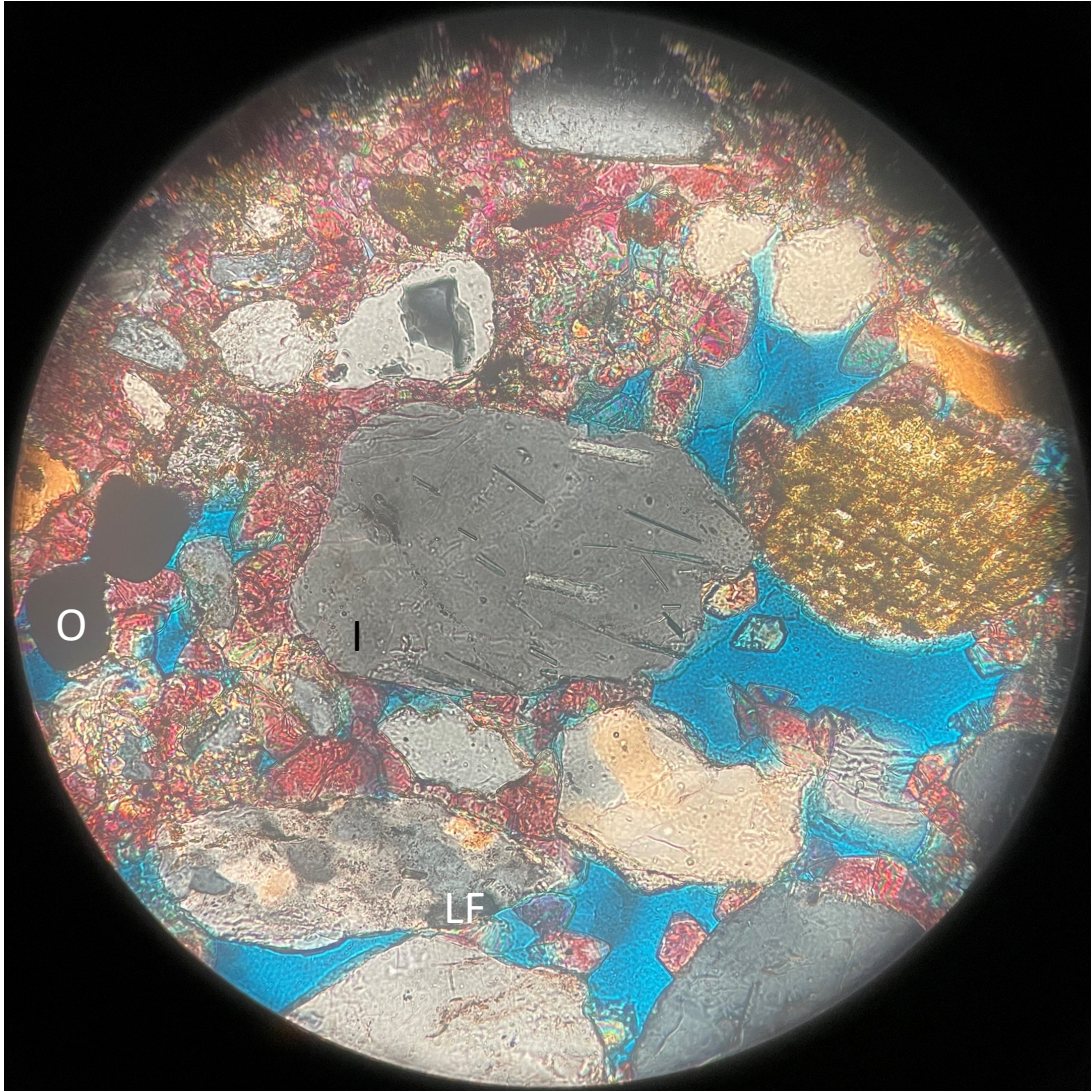
PPL

BB2 Mid

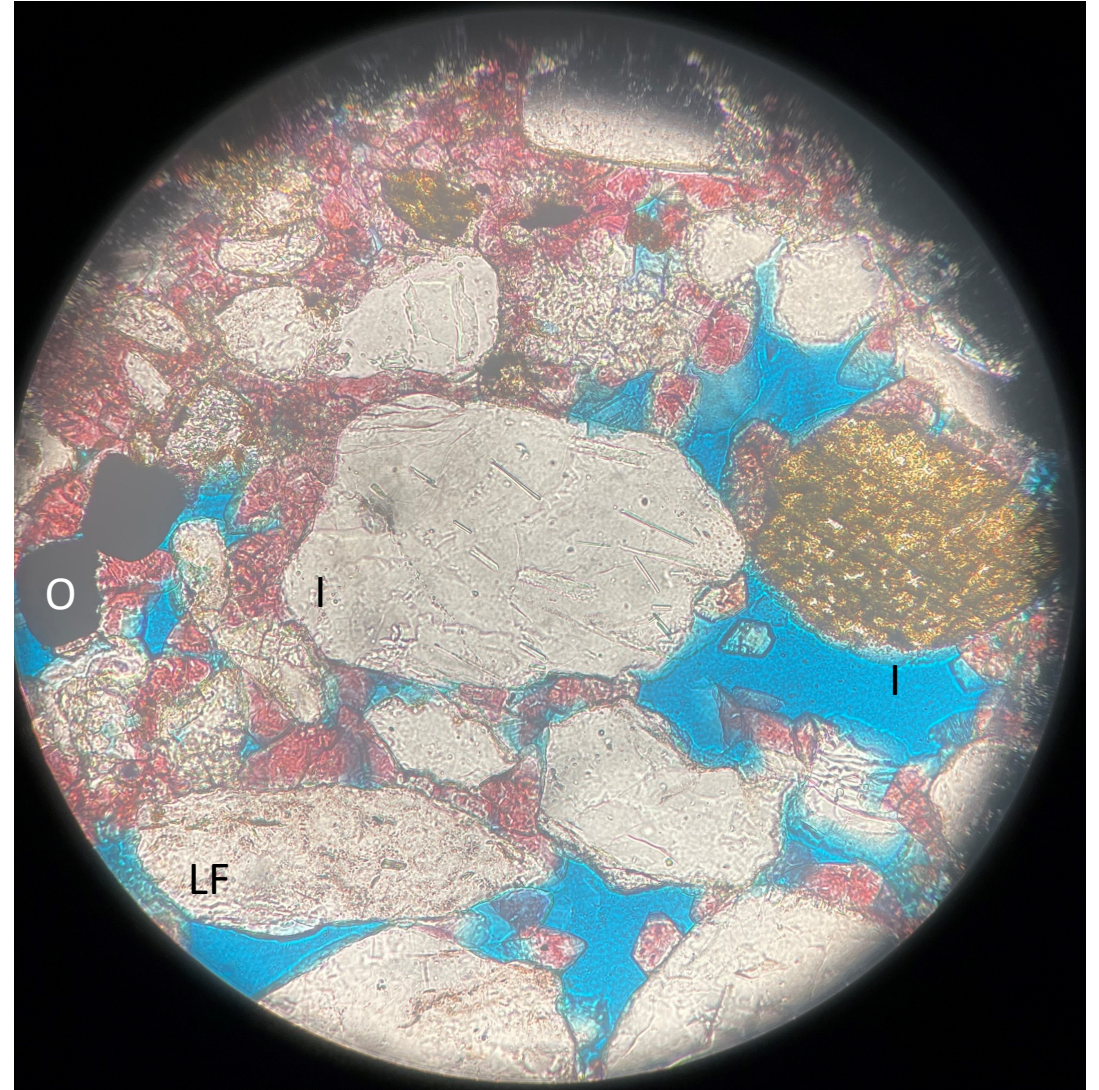
I – quartz grain with needle-like crystals, potentially oriented?

LF – lithic fragments

O – unidentified opaque mineral

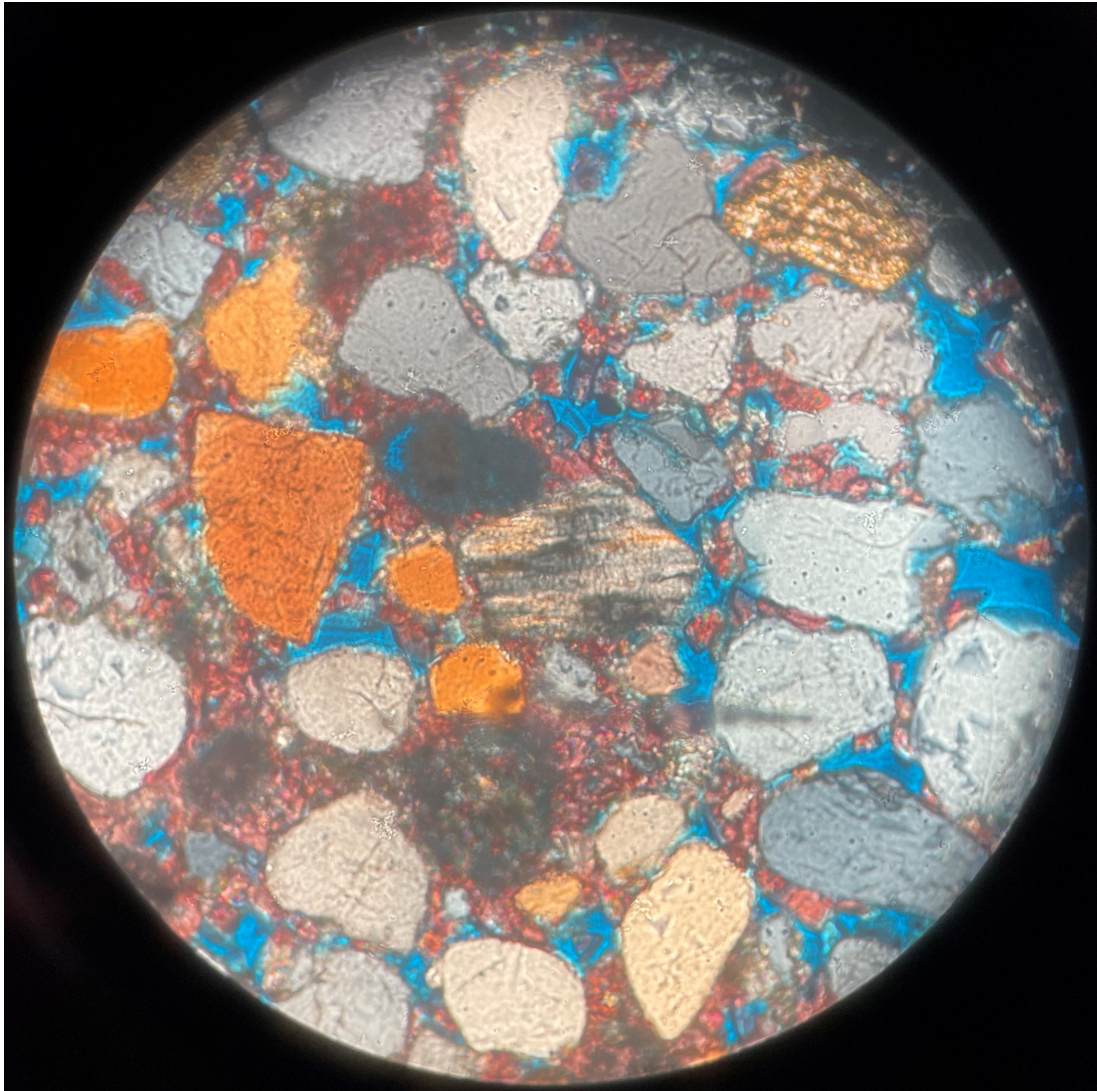


XPL



PPL

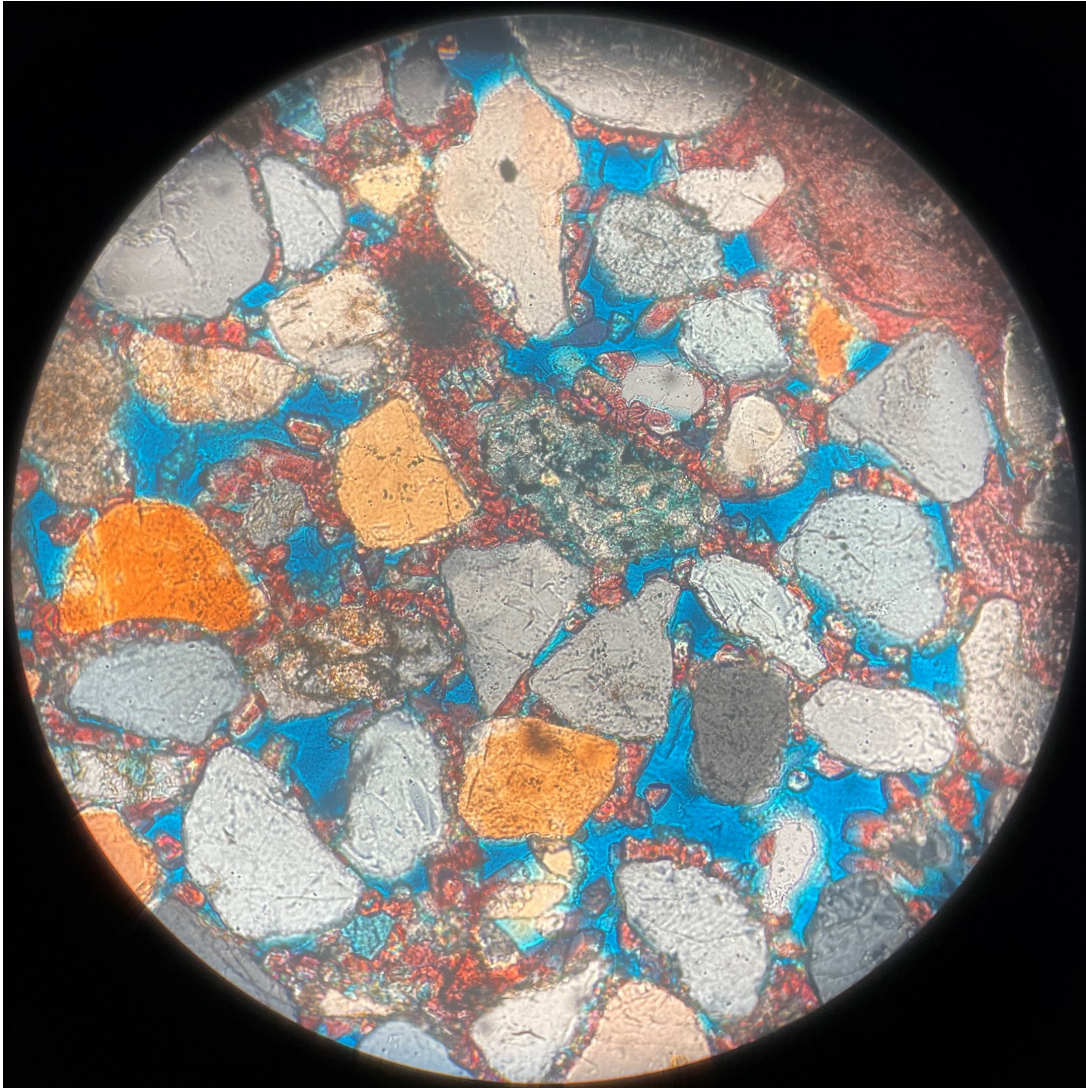
BB2 Mid:



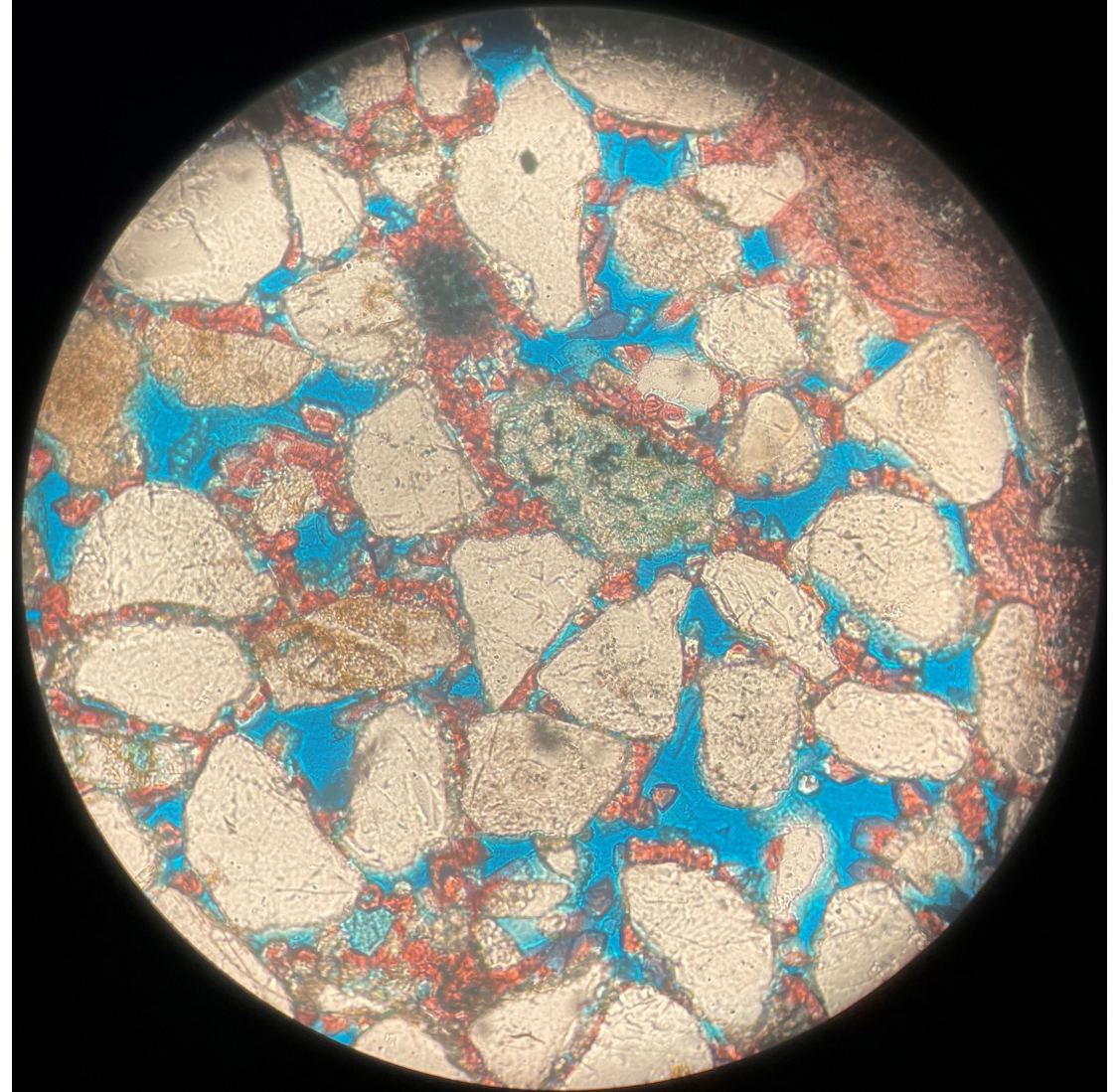
XPL

- Alignment and elongation of quartz crystals
 - Metamorphosed quartz
 - Bedded chert?

BB2 Mid: XPL

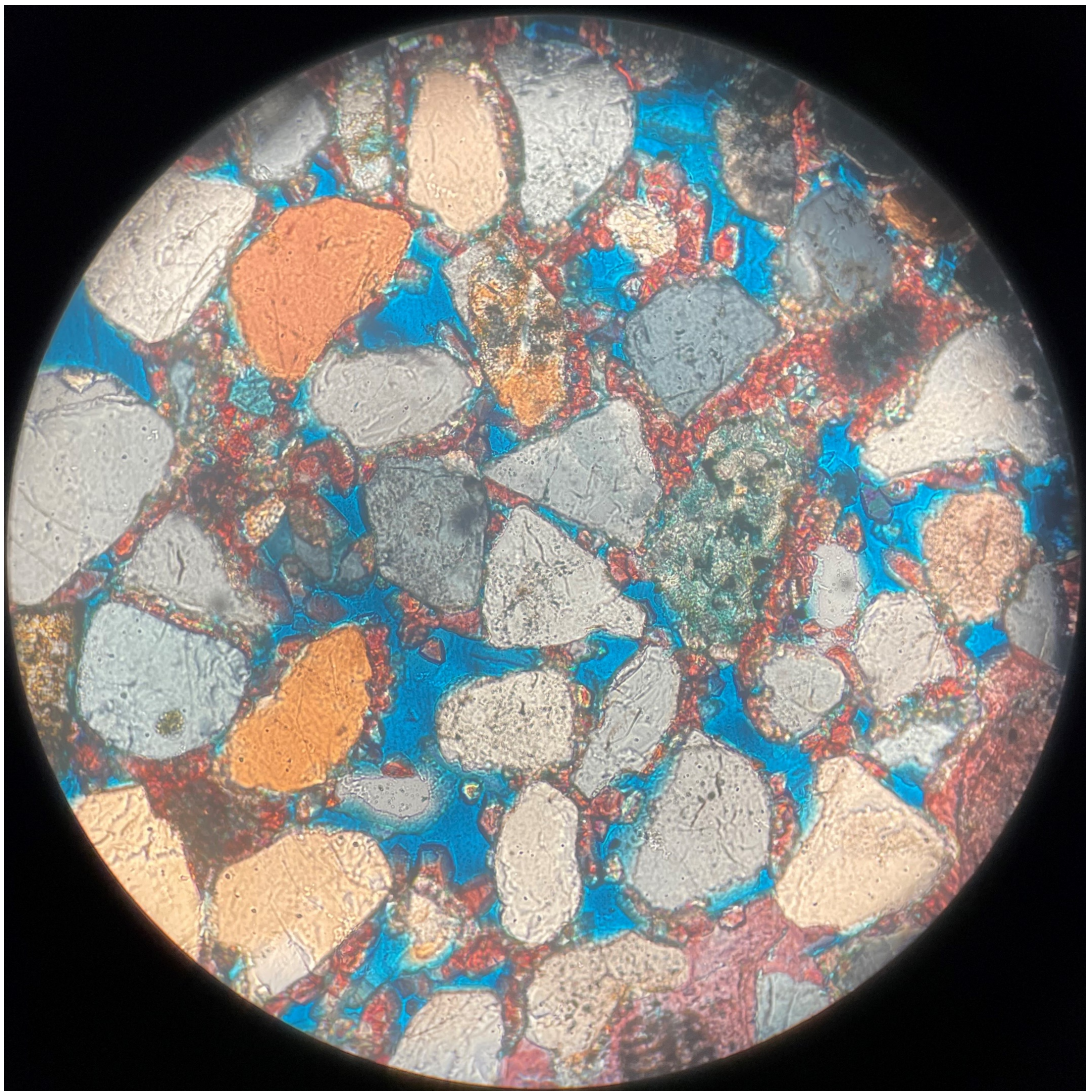


XPL



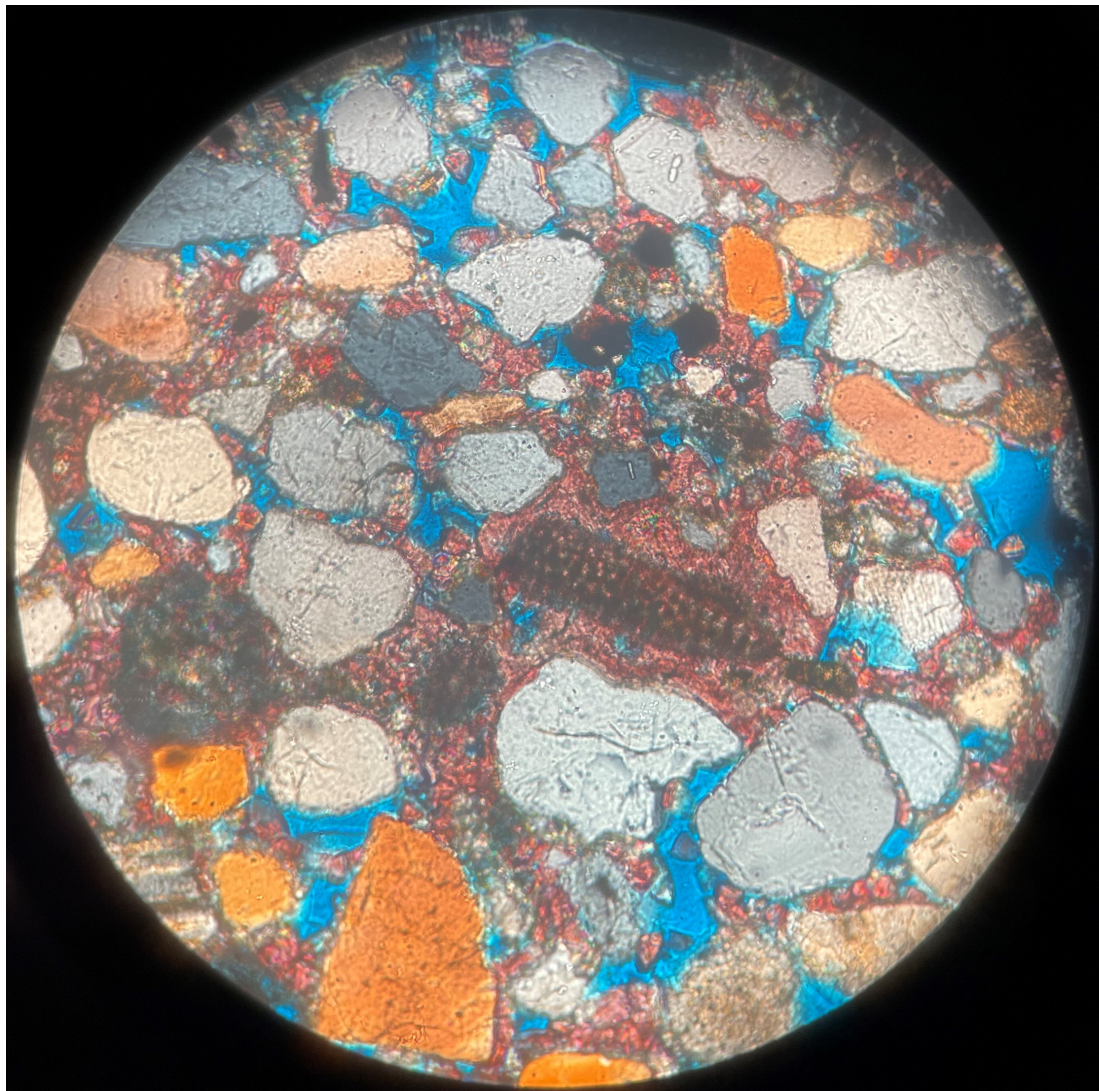
PPL

BB2 Mid:



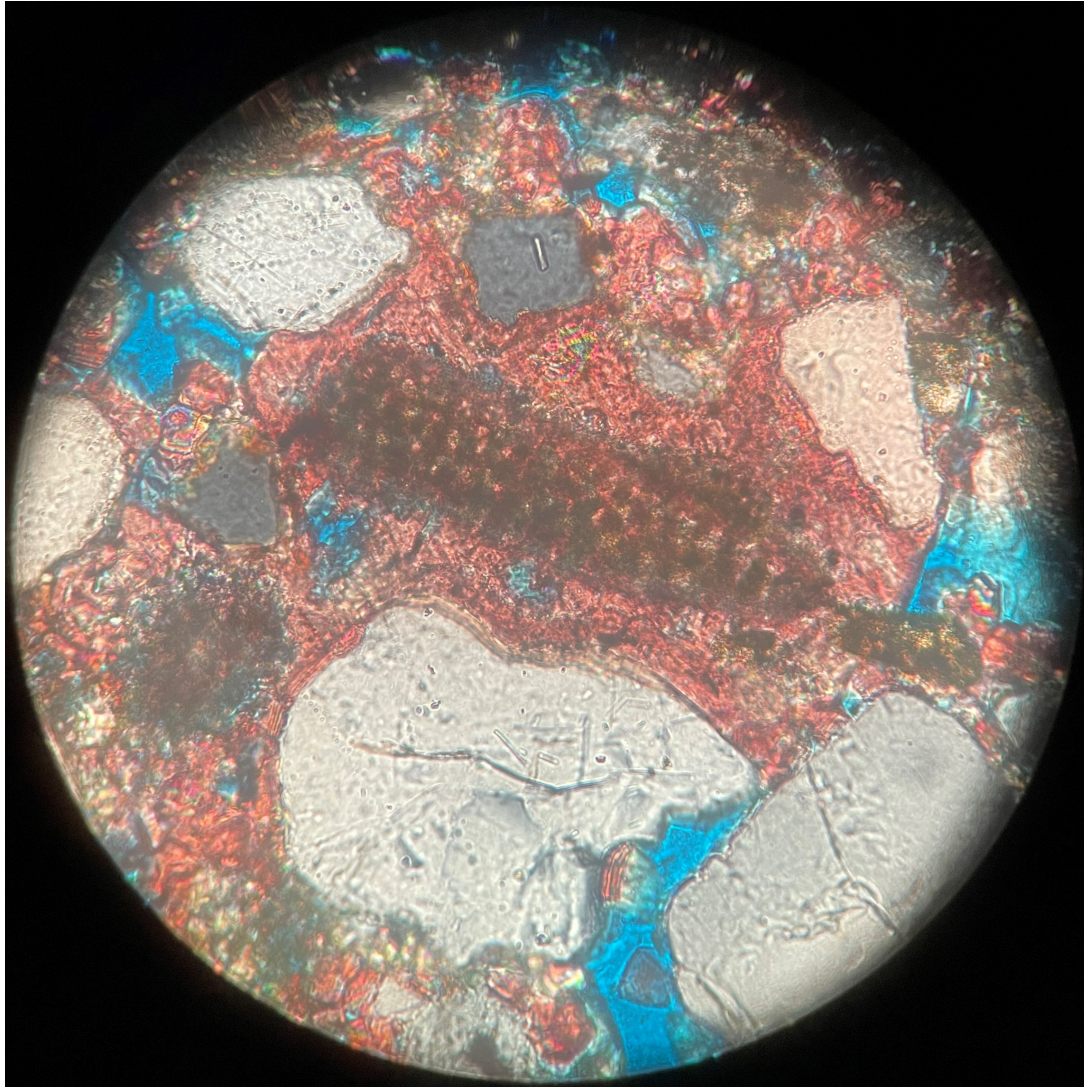
XPL

BB2 Mid:



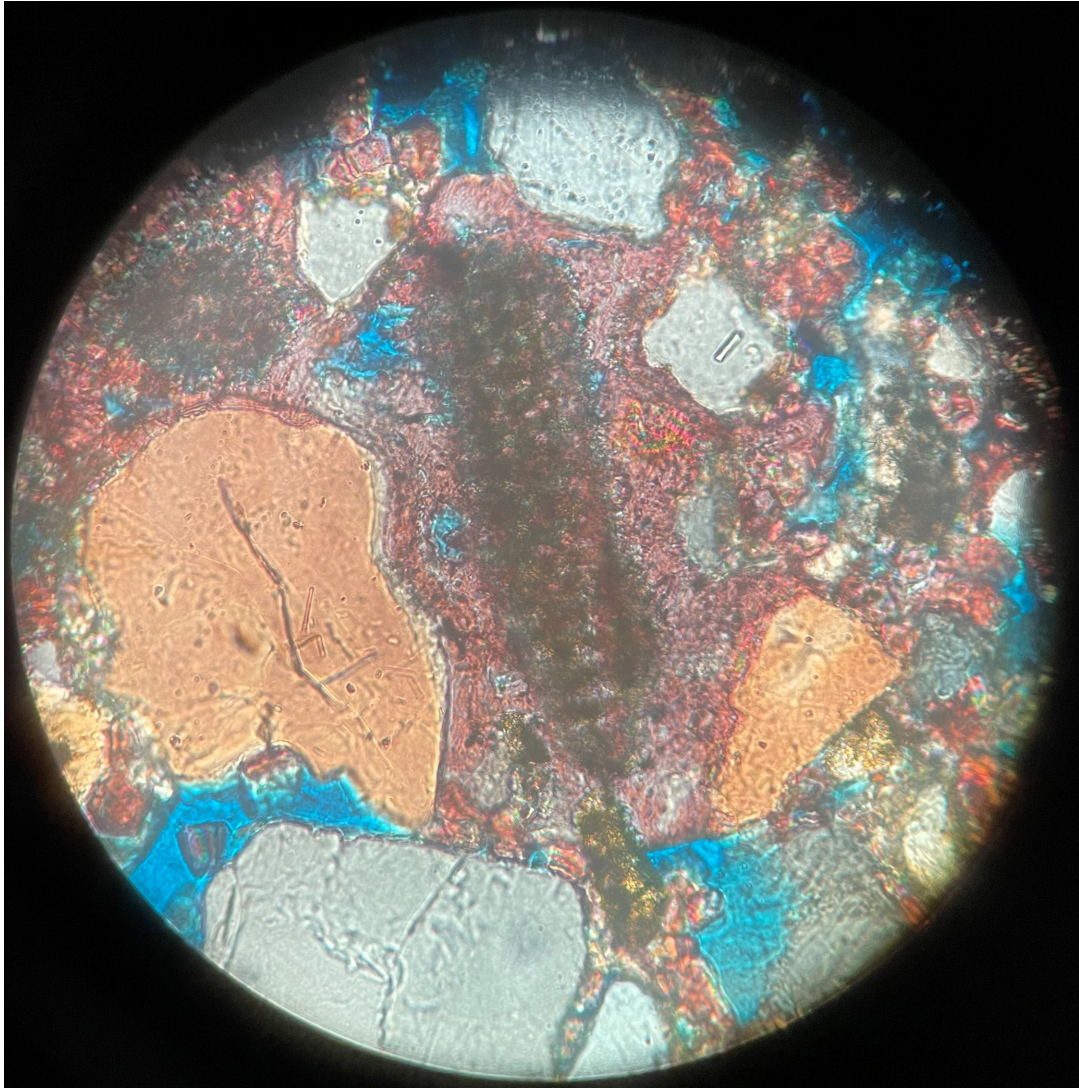
XPL

BB2 Mid:



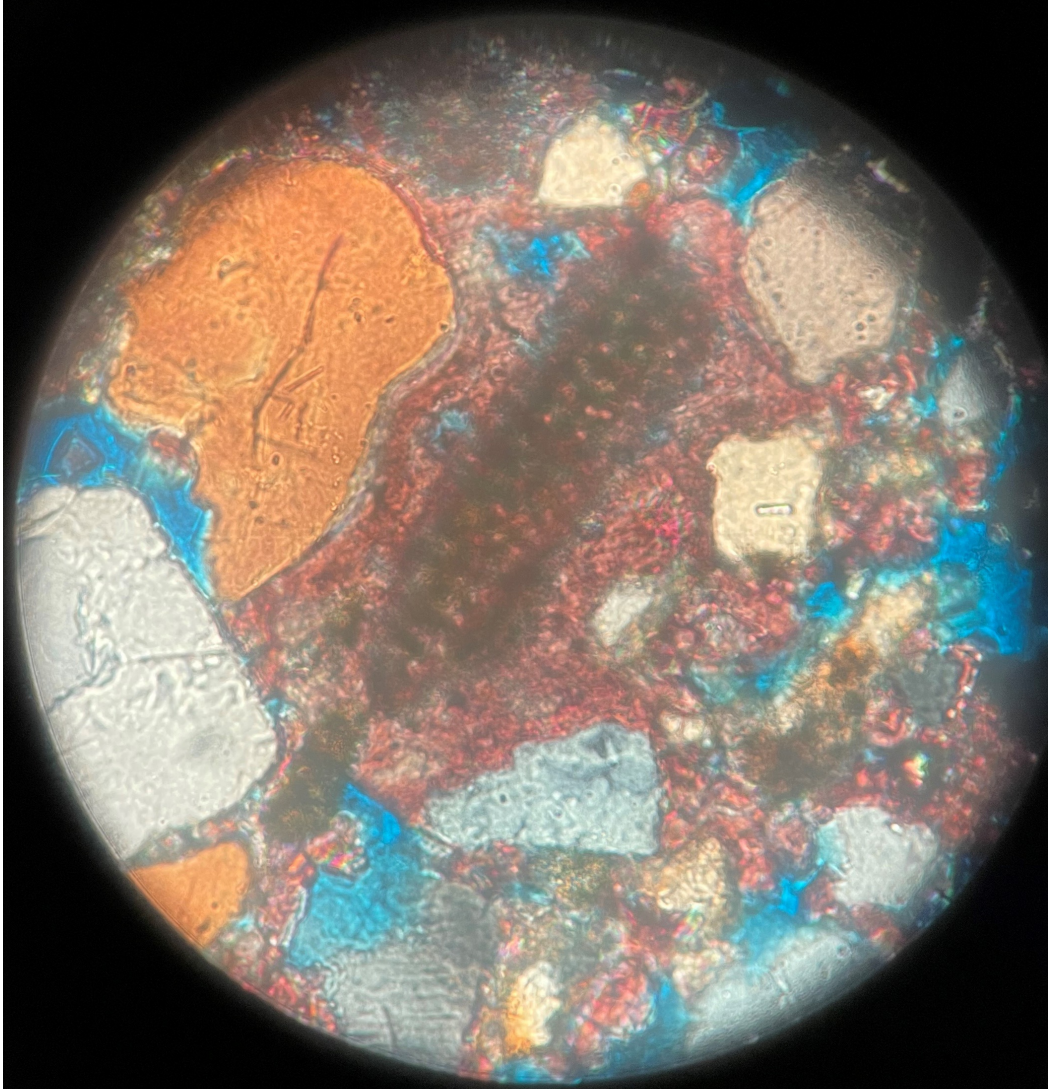
XPL

BB2 Mid:



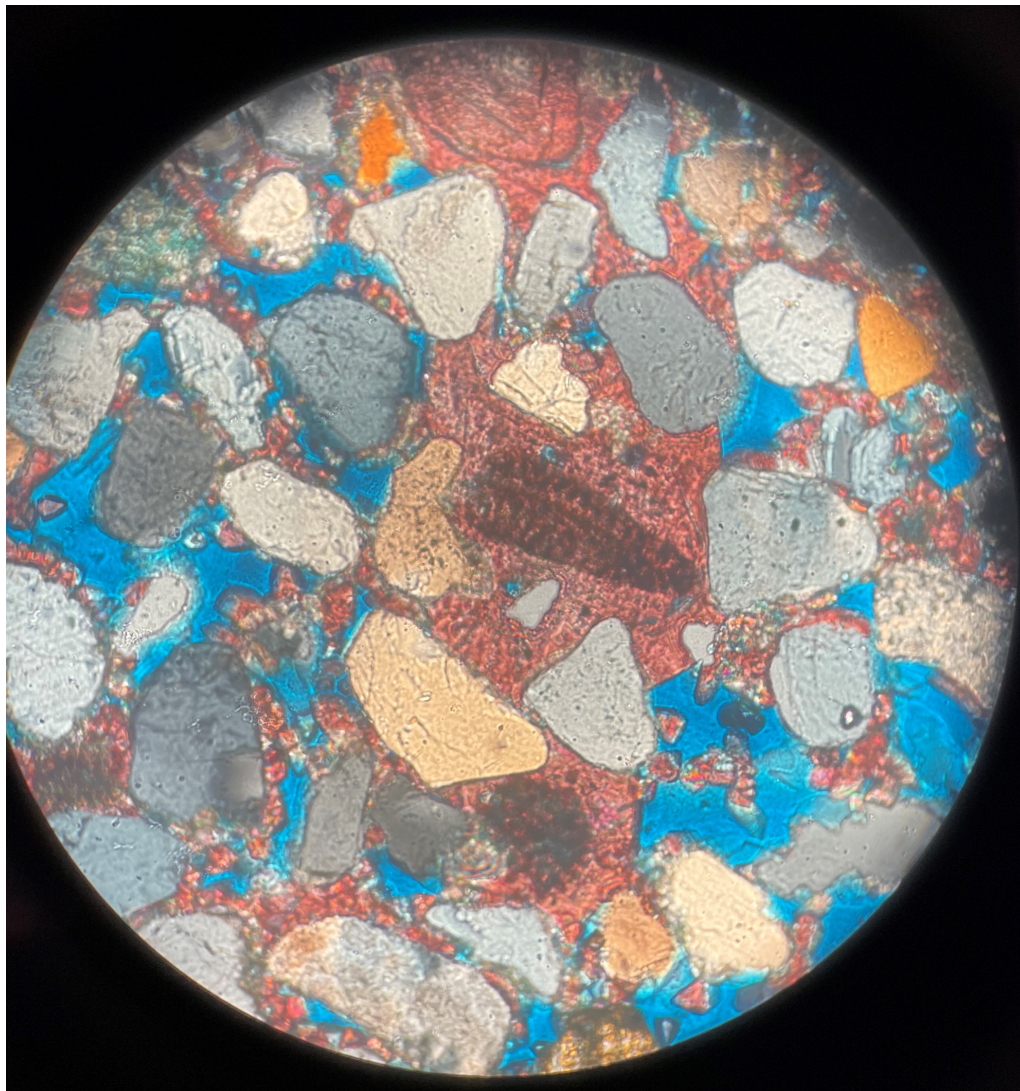
XPL

BB2 Mid:



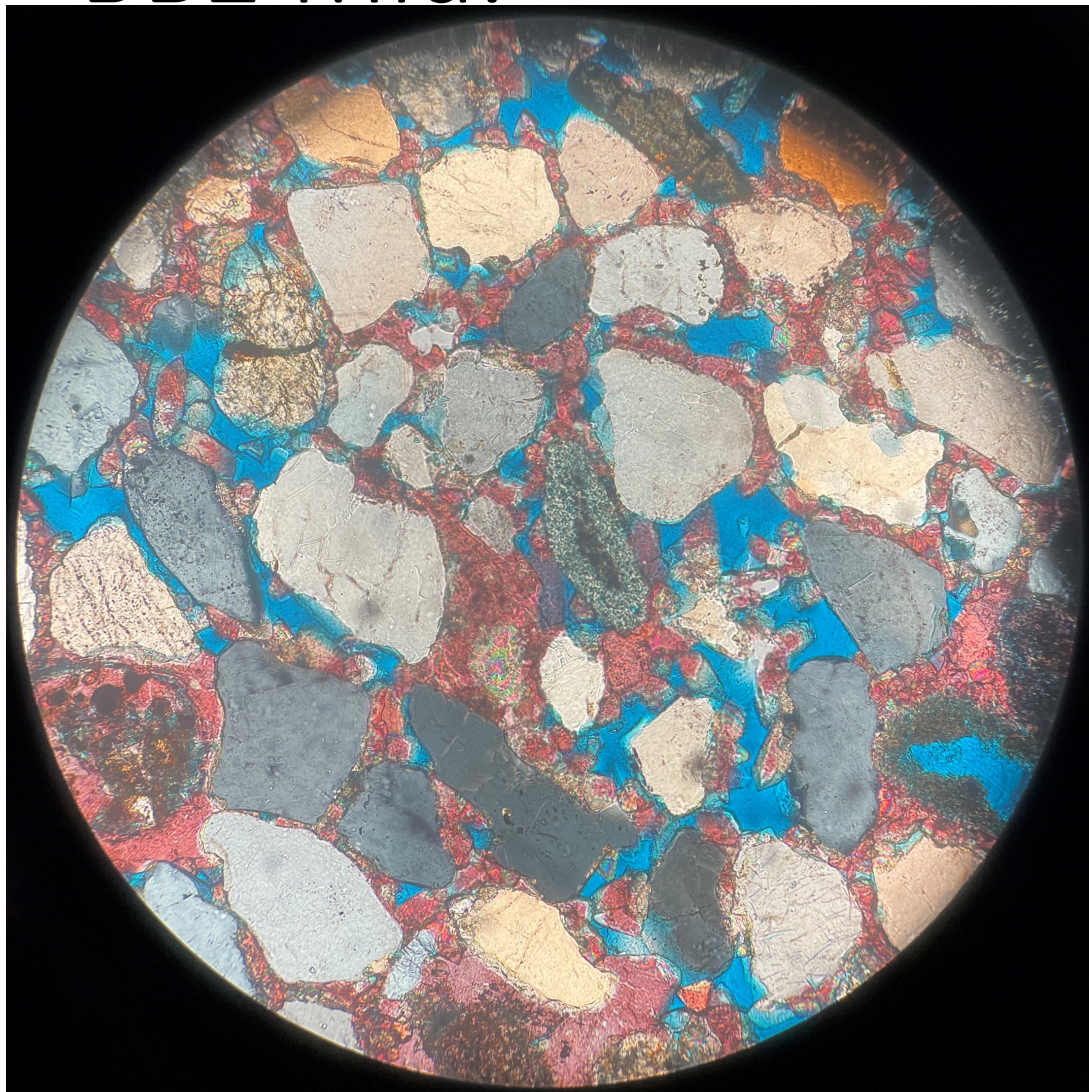
XPL

BB2 Mid: XPL



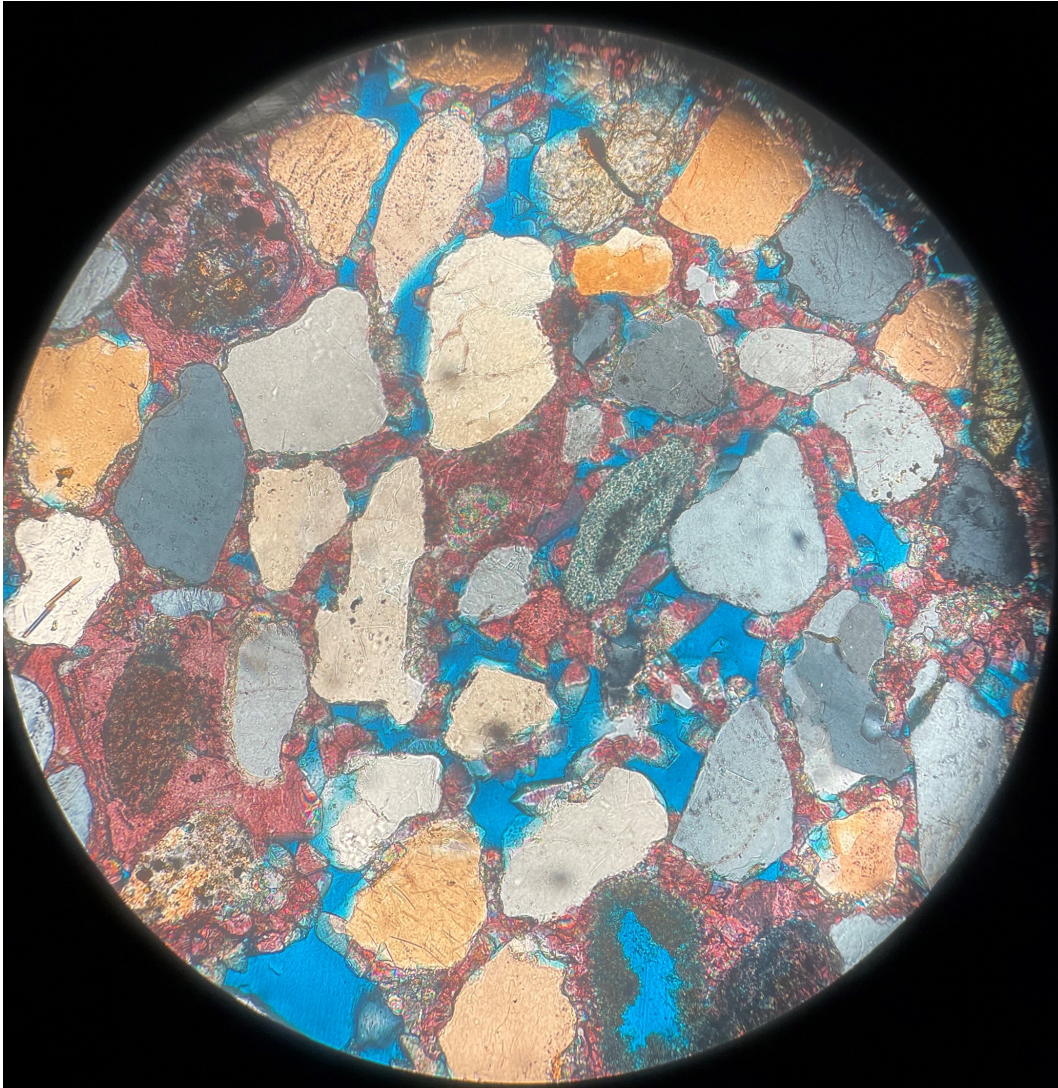
XPL

BB2 Mid:



XPL

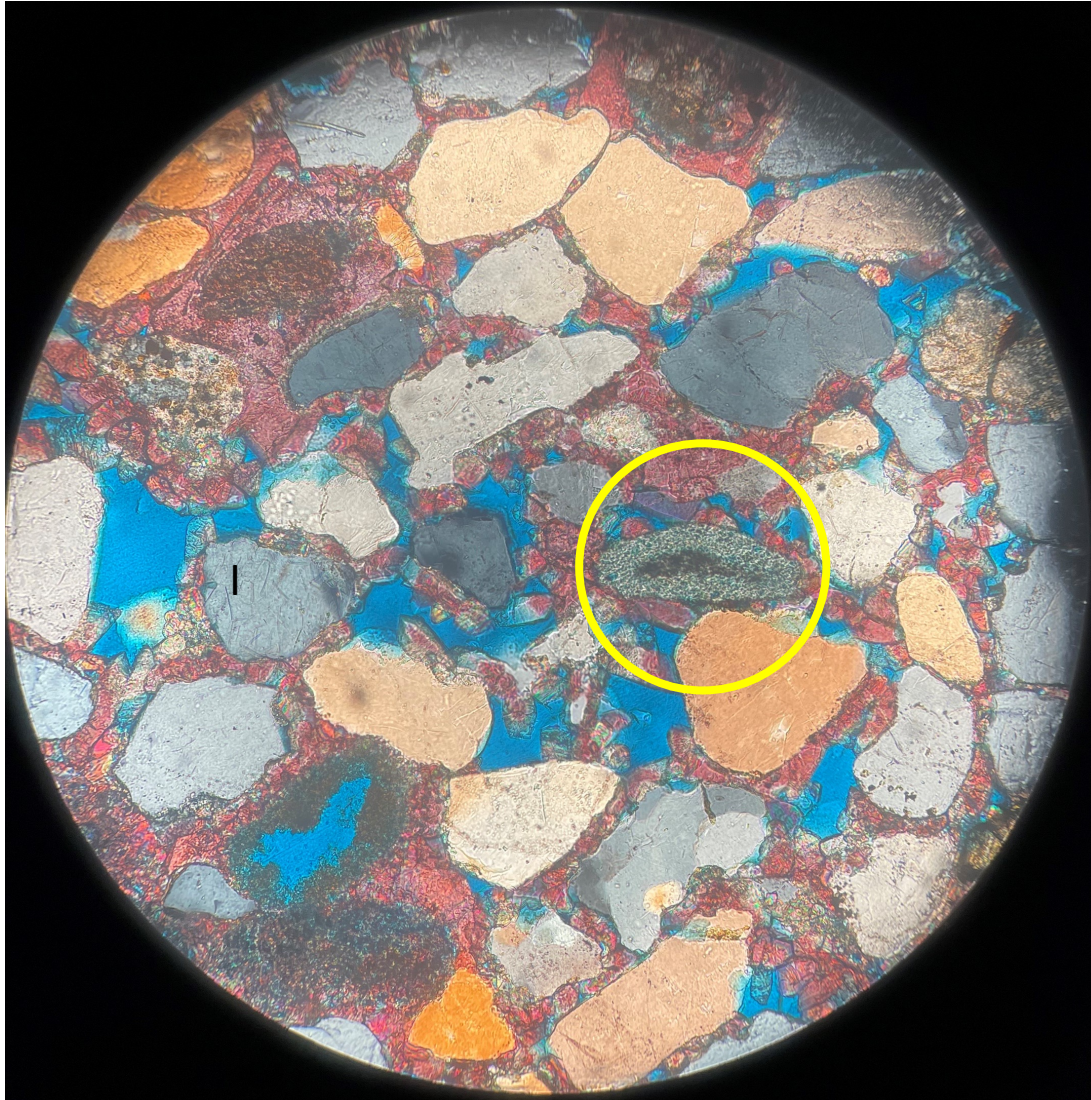
BB2 Mid:



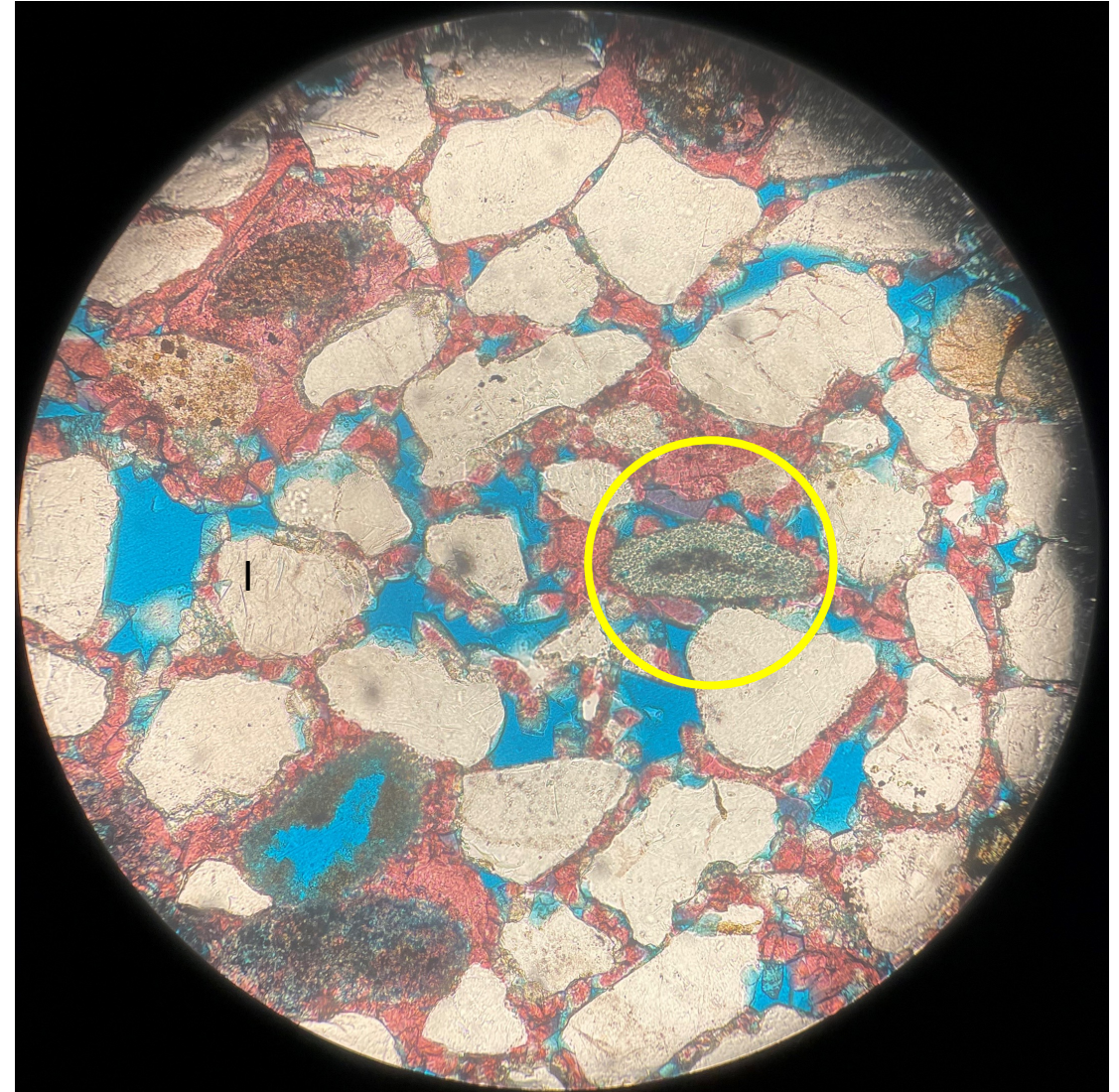
XPL

I – quartz grain with needle-like inclusions

BB2 Mid:



XPL



PPL

Preliminary conclusions

- More thin section review required
- Not quartz arenites – fraction of lithic fragments and feldspar grains exceeds 5%
 - Not quite as texturally mature as originally thought
 - Sediment source may be more proximal
- Two generations of cementation
 - Both occurred in the phreatic zone
- Future focus
 - Identify unknown grains
 - High relief, fractured
 - Confirm “syntaxial overgrowth cement” is calcite – SEM?