

This handout is an example of an alternative exercise used on the Access Anglesey field course. It was laminated and taken into the field for use by those who were unable to fully visit the outcrops themselves as a relevant parallel experience. For more details see <https://accessanglesey.leeds.ac.uk/>
Note: the students had access to hand specimens that are not shown here.



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Exercise: Cemlyn Bay

Cemlyn Bay samples – Phyllite,
Jasperry Phyllite, and Greenstone

Background

- The rocks at Cemlyn bay are part of a layered sequence that includes three sub lithologies.
- It should be possible to get to a viewpoint from which the outcrops can be seen; we endeavour to use the relay system here to get some closer view. In parallel, we have some hand specimens and some photomicrographs available if desired.

Task 1: Examine rocks

- We have a variety of hand specimens and sawn slabs from Cemlyn bay that are available to be looked at.
- These include:
 - Phyllite (including both micaceous and quartz-rich layers)
 - Jaspery Phyllite – a red facies of phyllite
 - Greenstone – a dark green rock type associated with the jaspery phyllite
- Make an initial rock description of each rock type
- Note, record or sketch any deformation characteristics you see in hand specimen

Task 2: Interpreting the greenstone

- Whilst the sample is quite fine grained and difficult to examine in hand specimen, we have a thin section (09).
- In thin section a variety of different minerals become apparent, as do a variety of different structural features that may lead us to accurately place the rock into context.

Have a look at the various rocks in plane and cross polarised light.

Can you identify:

The mineralogy of the sample? (hint – work slowly from the plane polars images, there are subtle differences when you get your eye in)

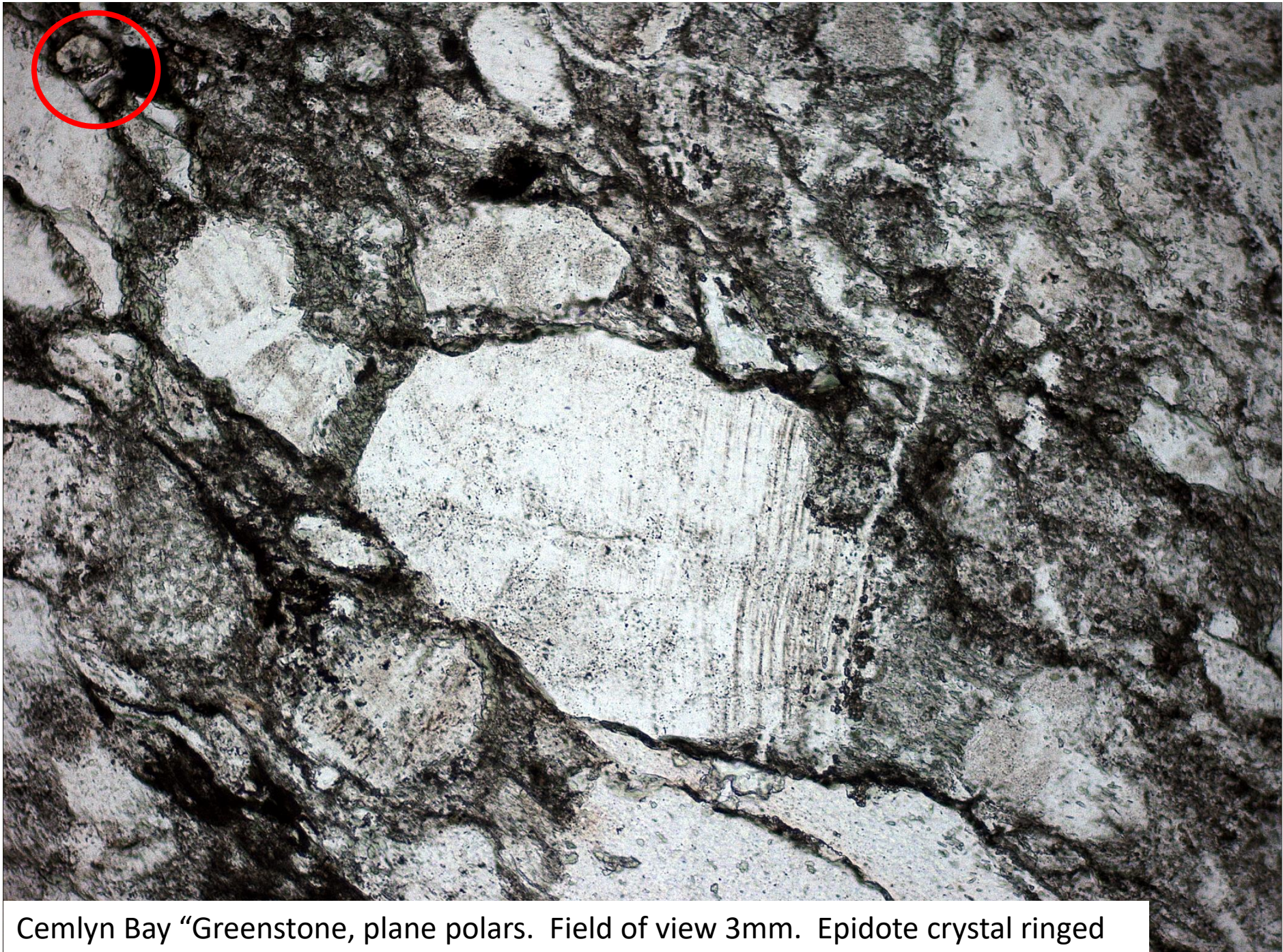
Any indicators for deformation?

Was deformation brittle or ductile, or both? Evidence?

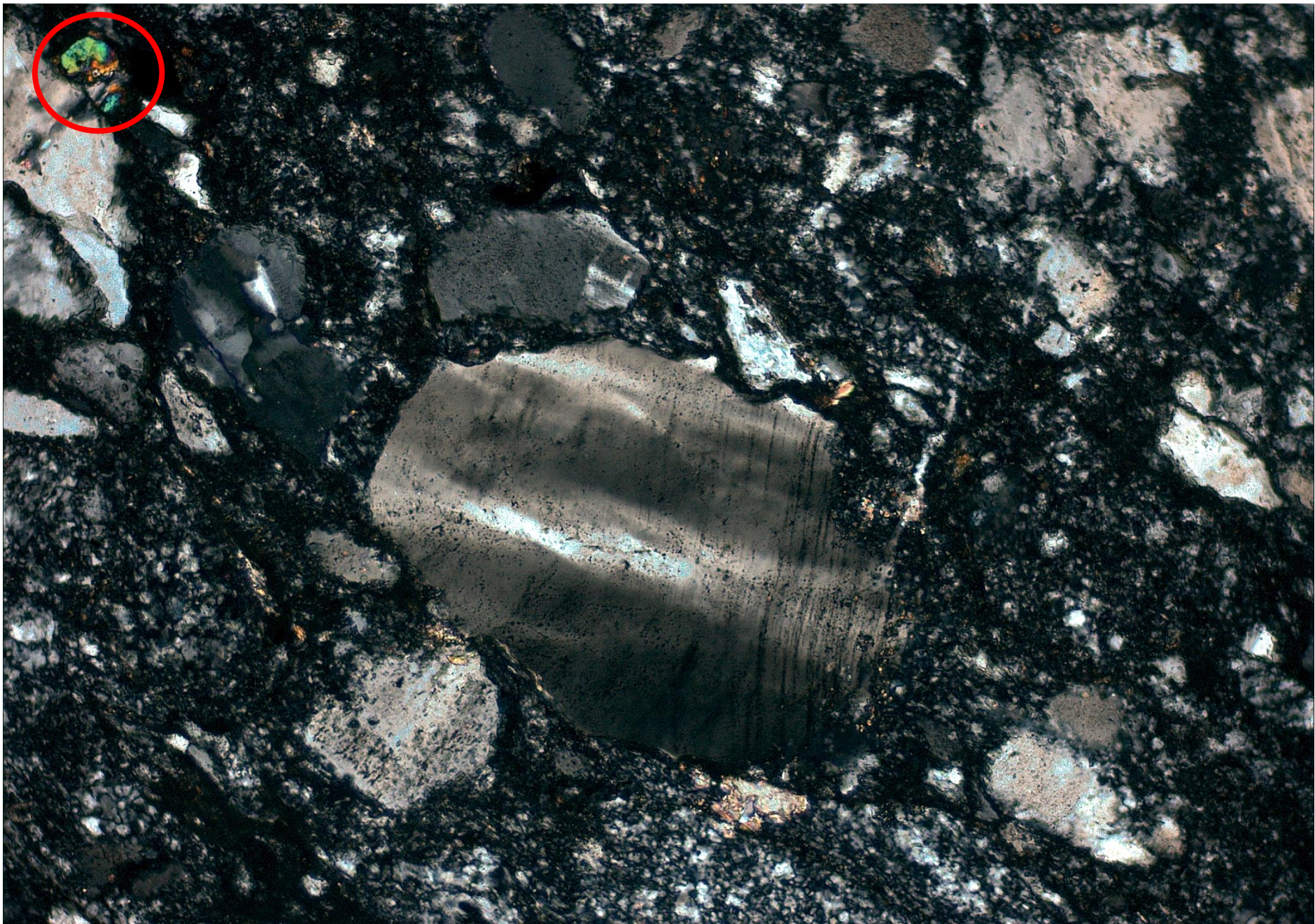
Prior to deformation, what was this rock composed of?

Assuming it was a sediment, what kind of sources did the sediment come from? Was the sediment mature?

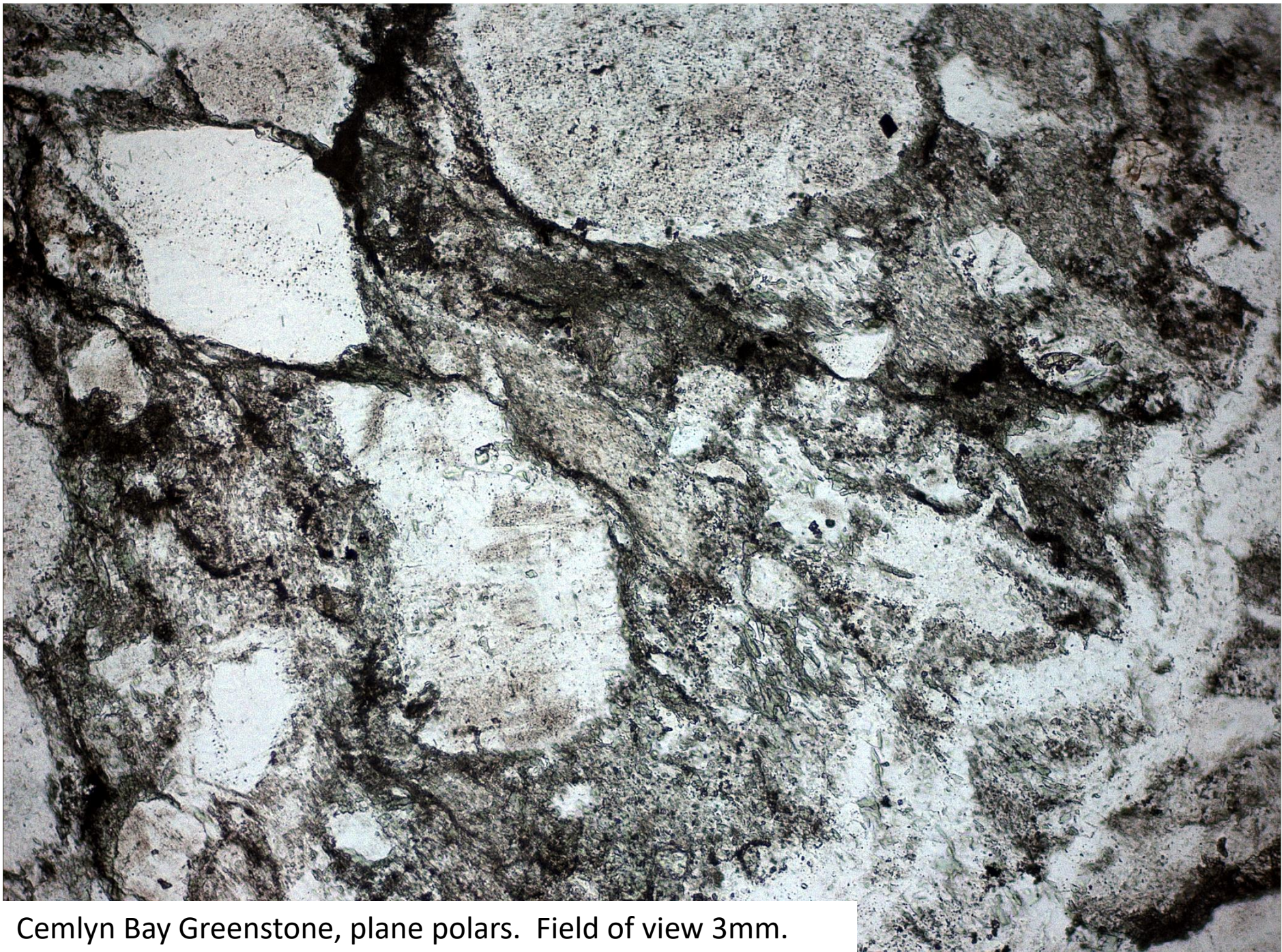
Is there any evidence of sedimentary reworking?



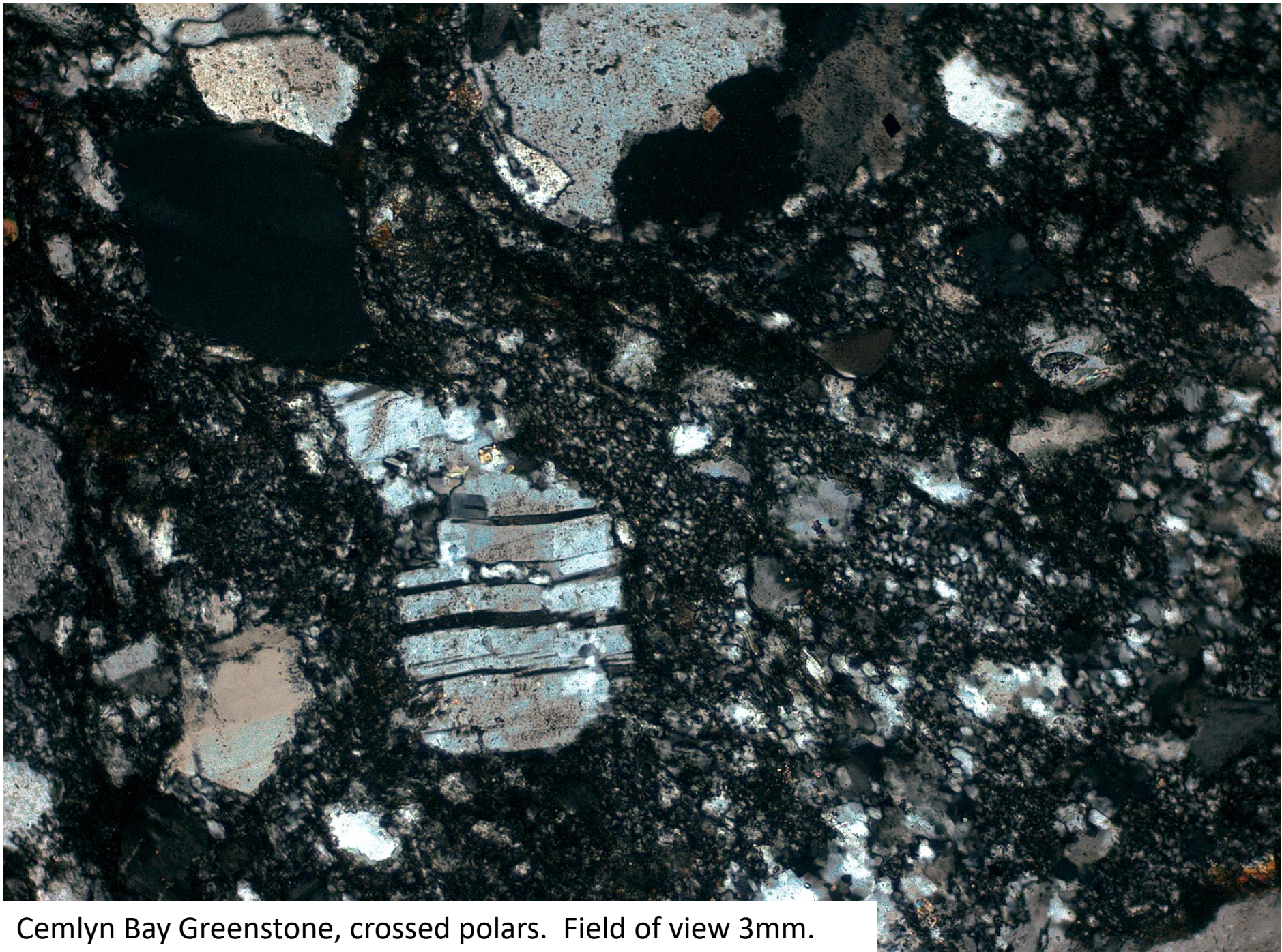
Cemlyn Bay "Greenstone, plane polars. Field of view 3mm. Epidote crystal ringed



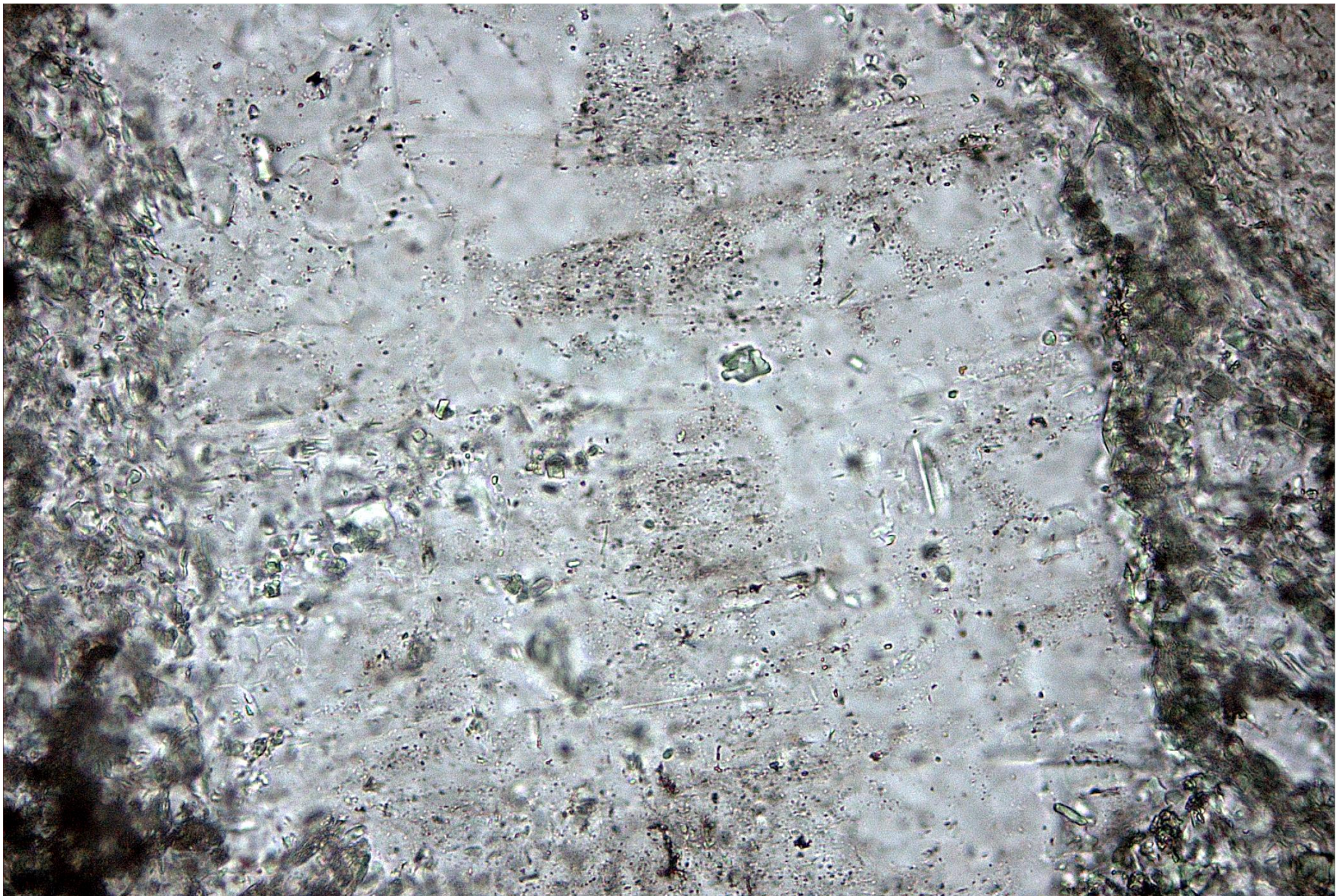
Cemlyn Bay Greenstone, crossed polars. Field of view 3mm. Epidote crystal ringed



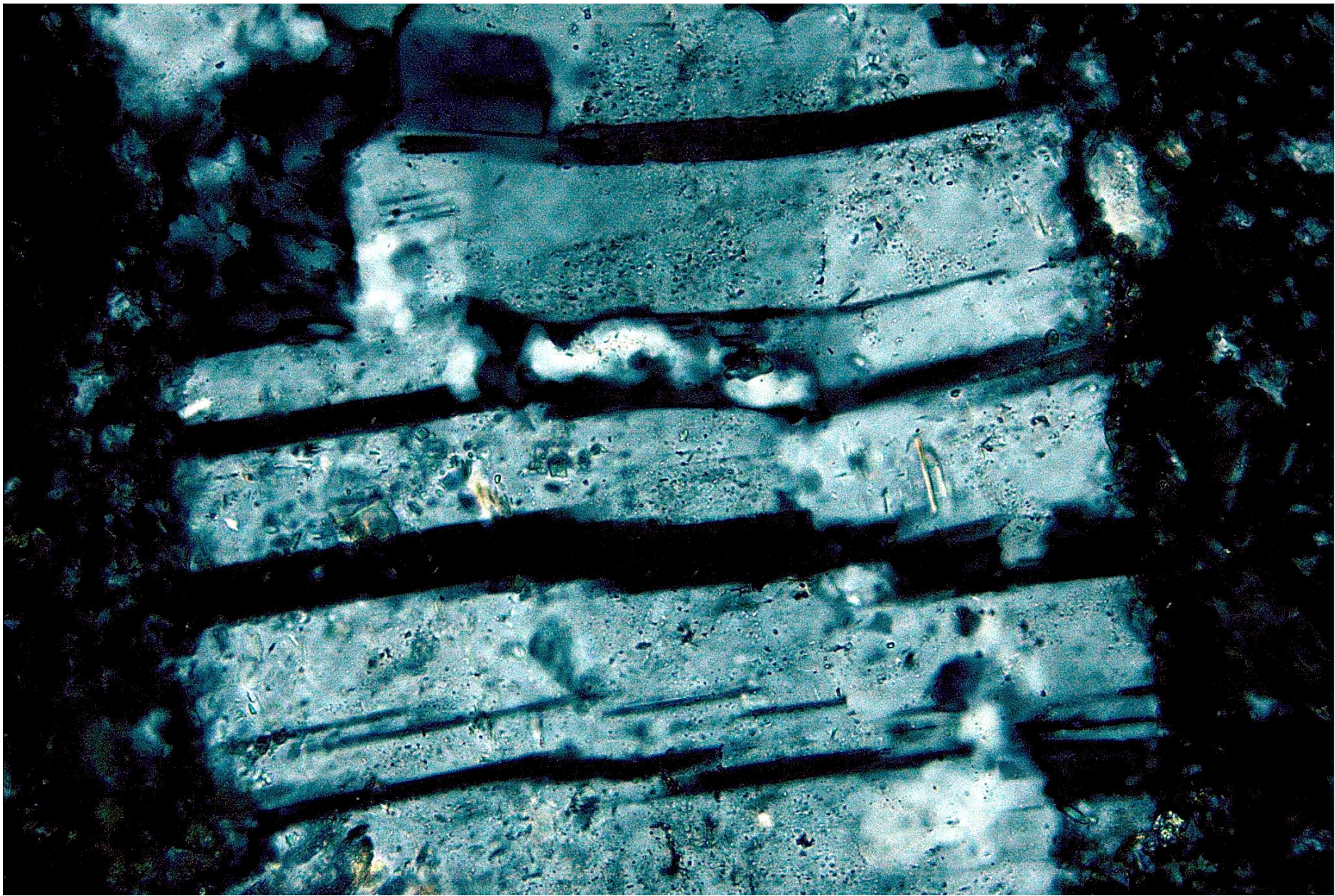
Cemlyn Bay Greenstone, plane polars. Field of view 3mm.



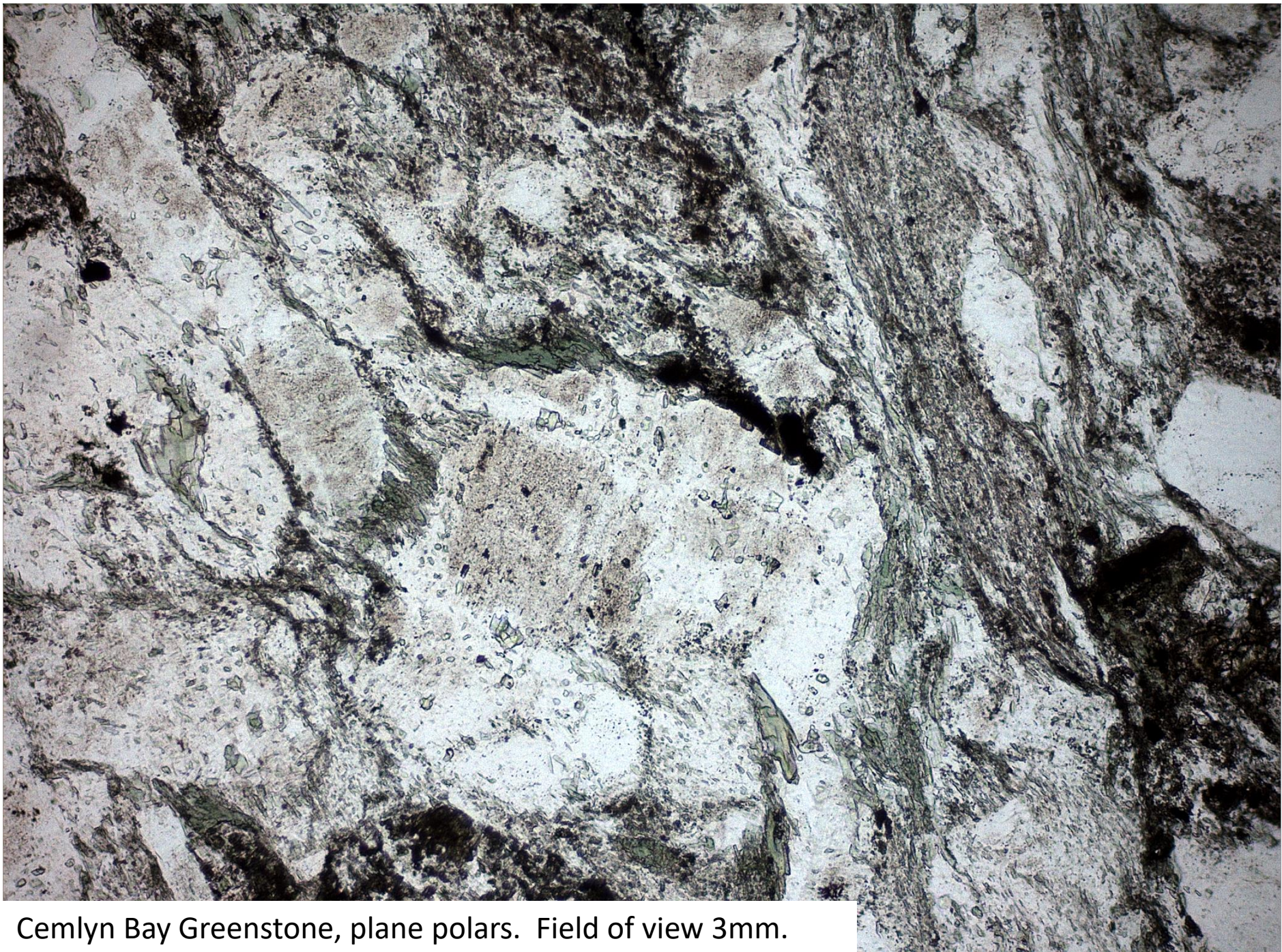
Cemlyn Bay Greenstone, crossed polars. Field of view 3mm.



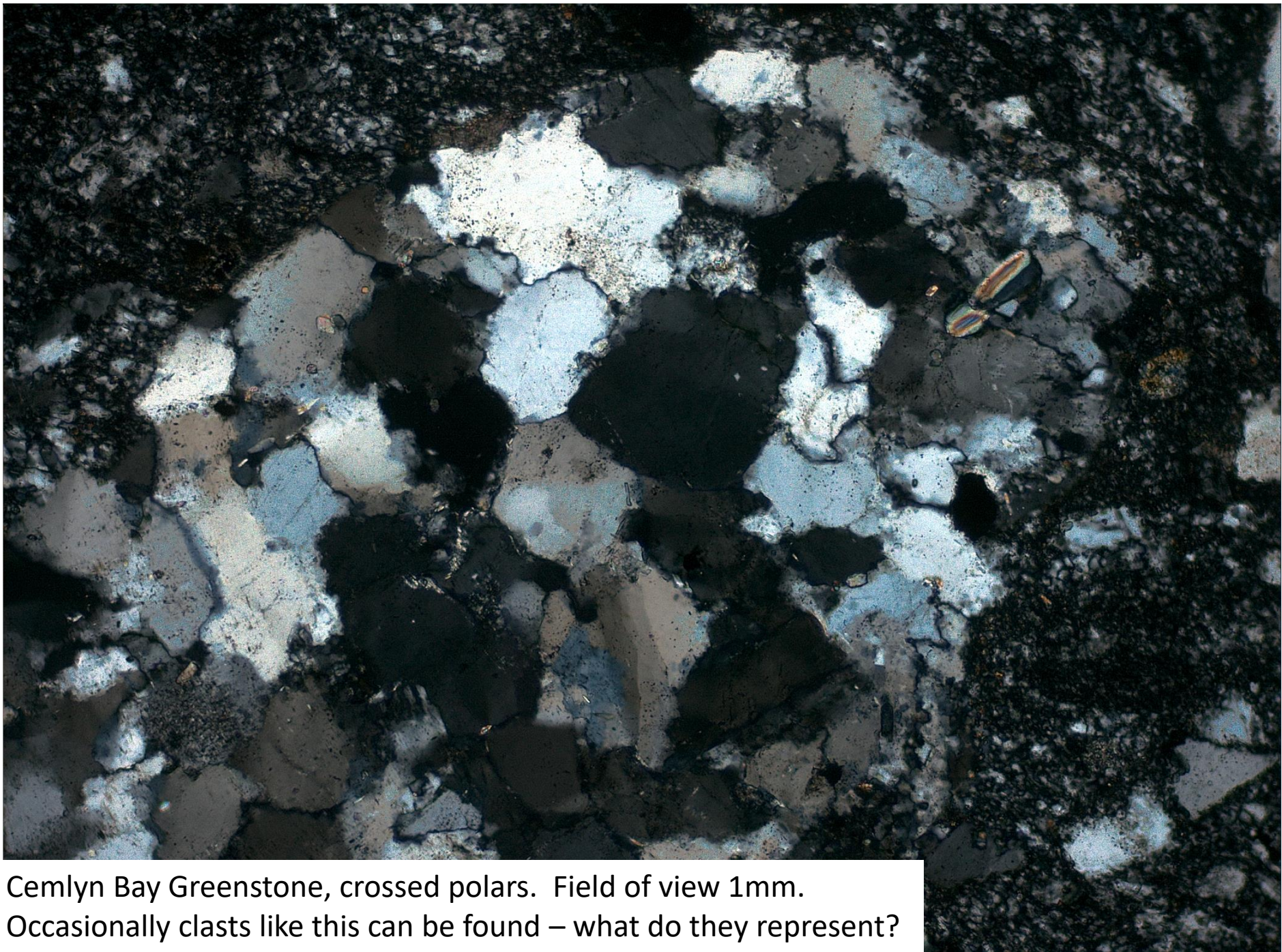
Cemlyn Bay Greenstone, plane polars. High magnification of feldspar from previous image. Field of view 0.5mm.



Cemlyn Bay Greenstone, crossed polars. High magnification of feldspar from previous image. Field of view 0.5mm.



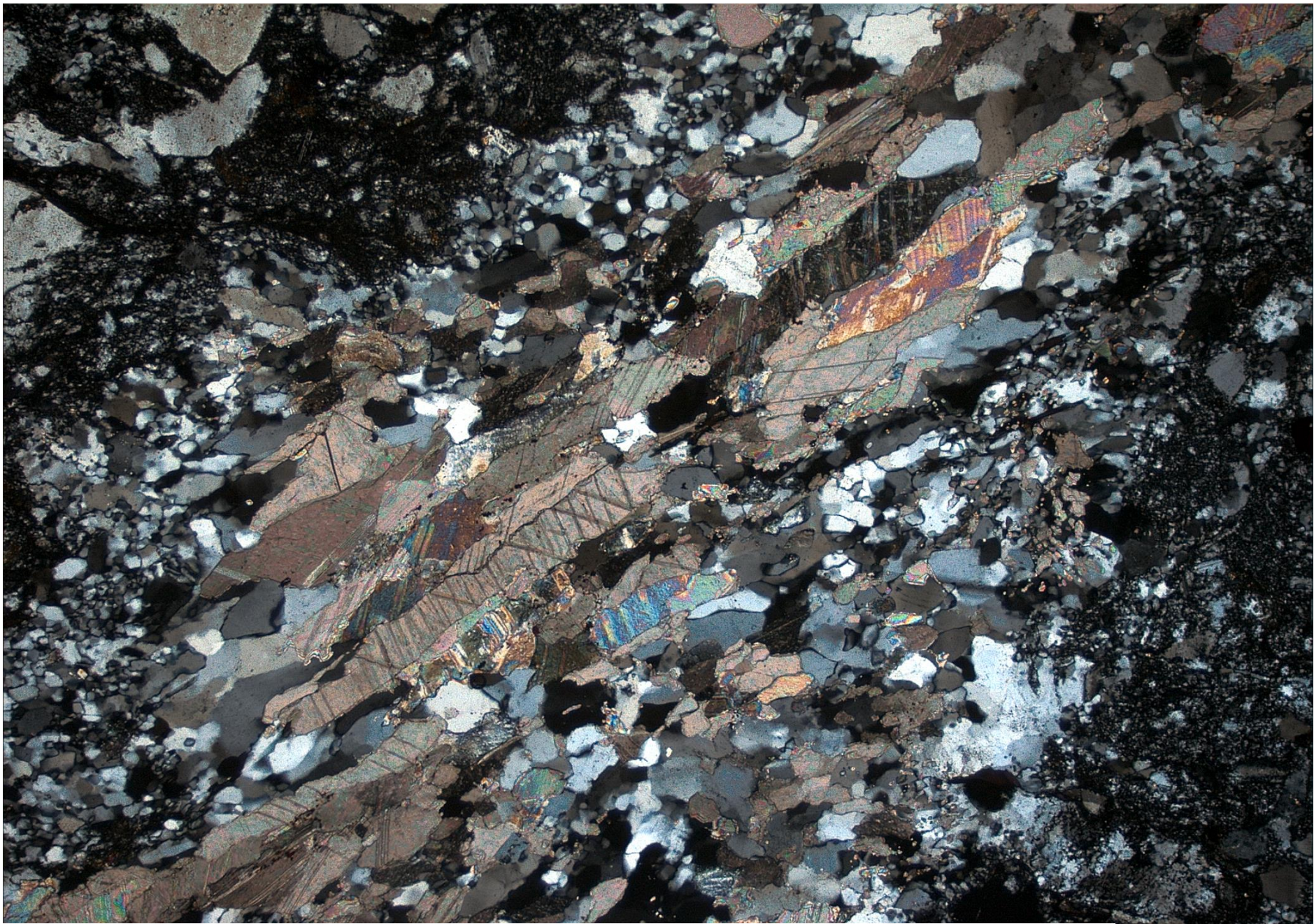
Cemlyn Bay Greenstone, plane polars. Field of view 3mm.



Cemlyn Bay Greenstone, crossed polars. Field of view 1mm.
Occasionally clasts like this can be found – what do they represent?



Cemlyn Bay Greenstone, plane polars image of a vein. Field of view 3mm.



Cemlyn Bay Greenstone, crossed polars image of a vein. Field of view 3mm.



Cemlyn Bay Greenstone, plane polars image of a vein. Field of view 3mm. Epidote ringed



Cemlyn Bay Greenstone, plane polars image of a vein. Field of view 3mm. Epidote ringed