CORDIERITE

Chemical formula: $Mg_2Al_3[AlSi_5O_{18}]$

Crystal system: orthorhombic

Color in thin section: usually colorless, although Fe-rich cordierite may be colored and pleochroic with: X = colorless, pale yellow, pale green brown
Y = pale blue
Z = pale blue to violet

Form: allotriomorphic grains; polysynthetic and cyclic twinning is common

Cleavage: good on {100}; parting on {001}

Indices of refraction: n_α = 1.521 – 1.561 n_β = 1.524 – 1.574 n_γ = 1.527 – 1.578

Birefringence: 0.005 – 0.016

Optic sign: biaxial negative or positive

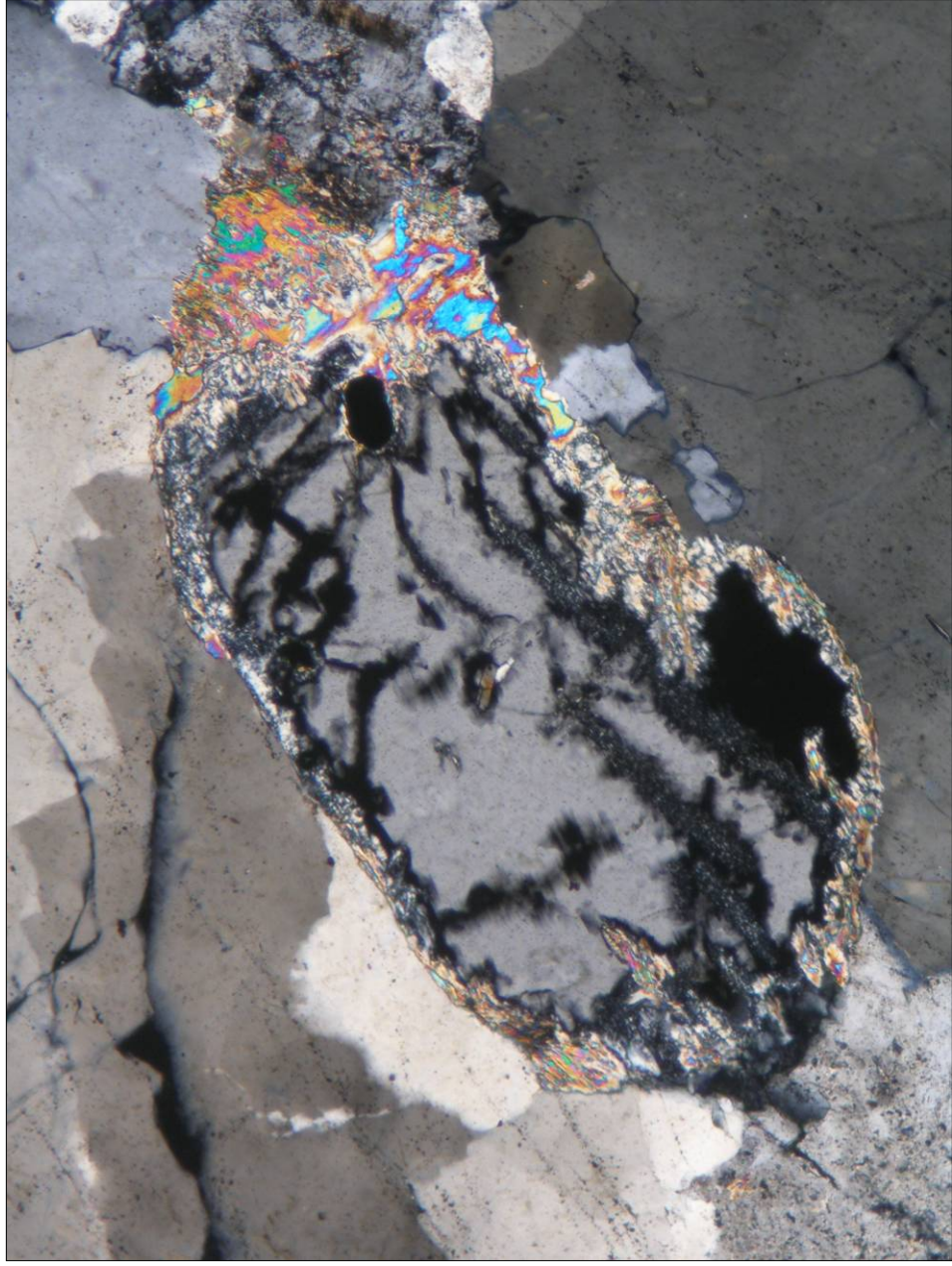
Alteration: may be altered to fine-grained aggregate of chlorite and muscovite (so-called pinitization)

Occurrence: gneiss, migmatite, granulite, amphibolite, contact hornfelses; also in pegmatites and granites

Similar minerals in thin sections: twinned cordierite may be mistaken with plagioclase; untwinned cordierite may be mistaken with quartz and orthoclase

Note: radioactive inclusions (zircon) in cordierite may be rimmed with yellow pleochroic halos

Cordierite in gneiss from Horní Bory, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.



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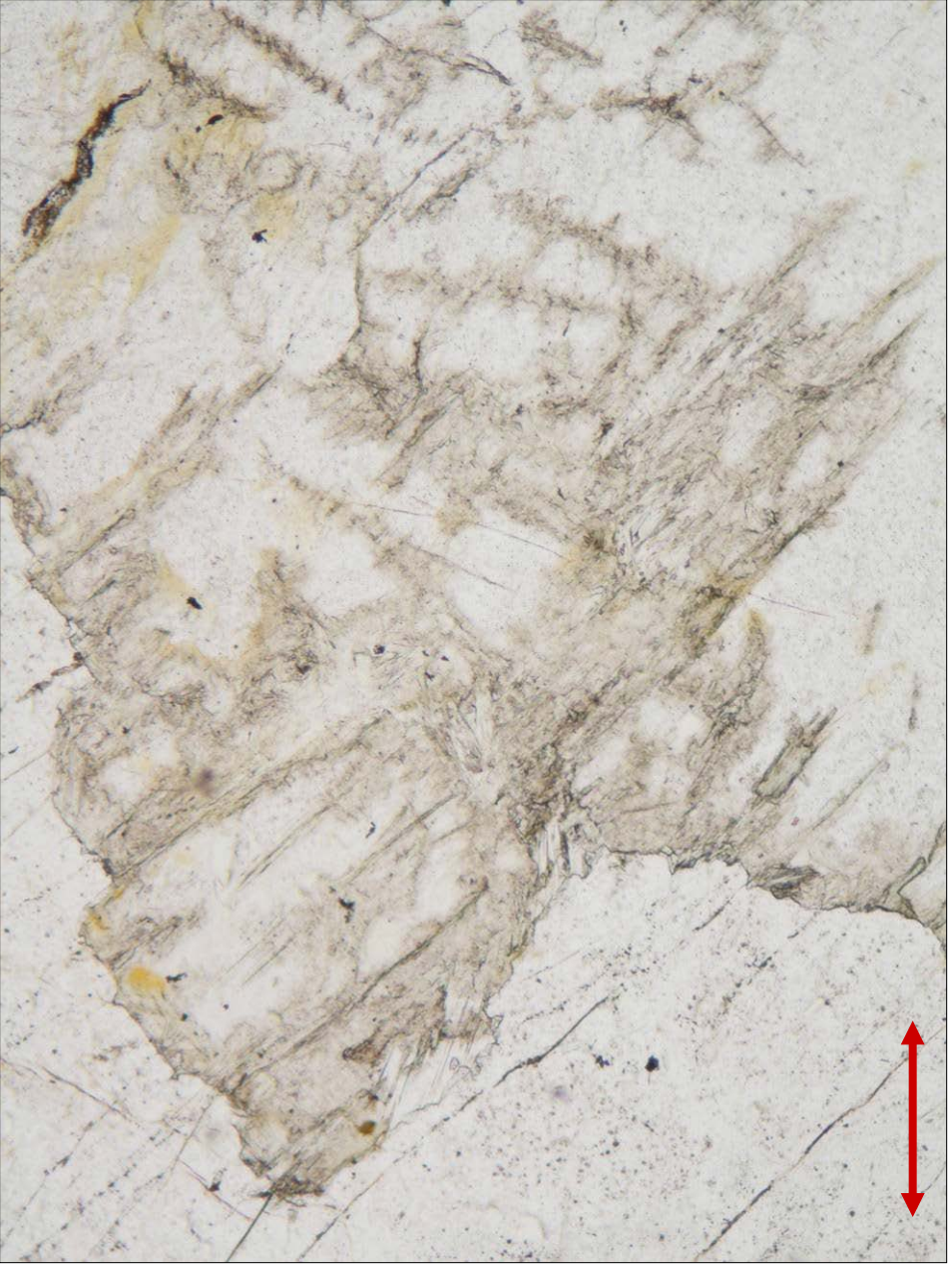
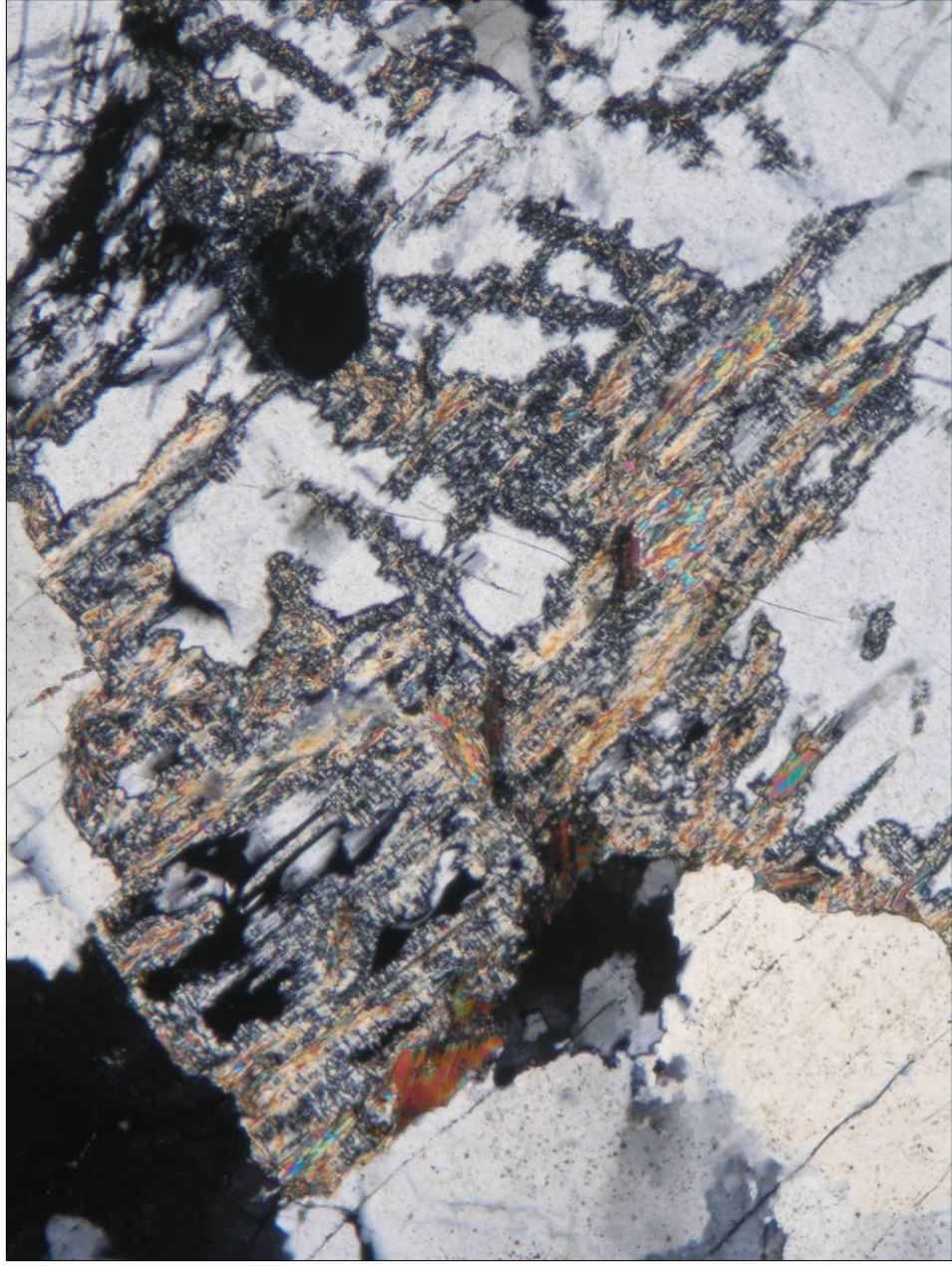
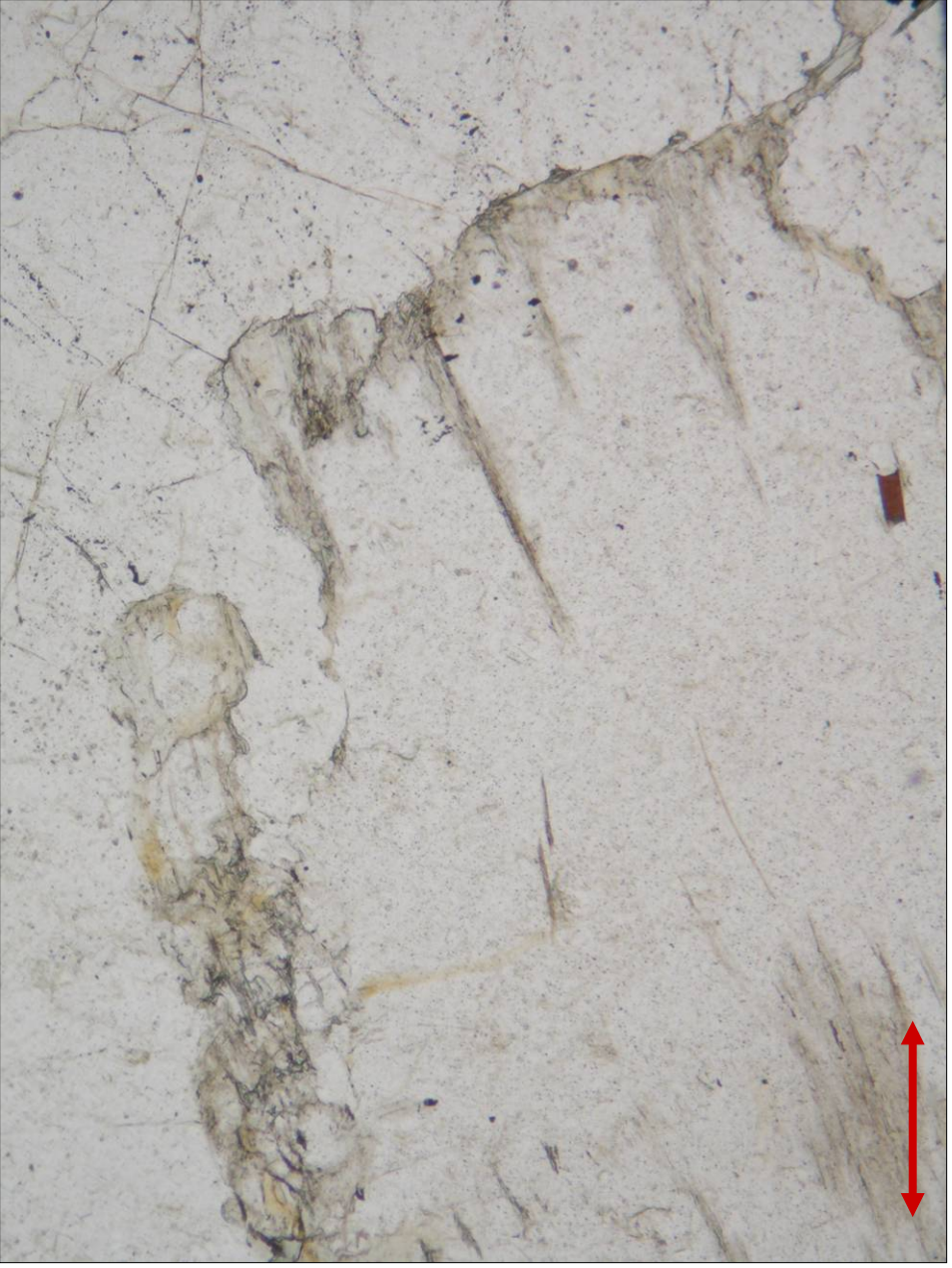
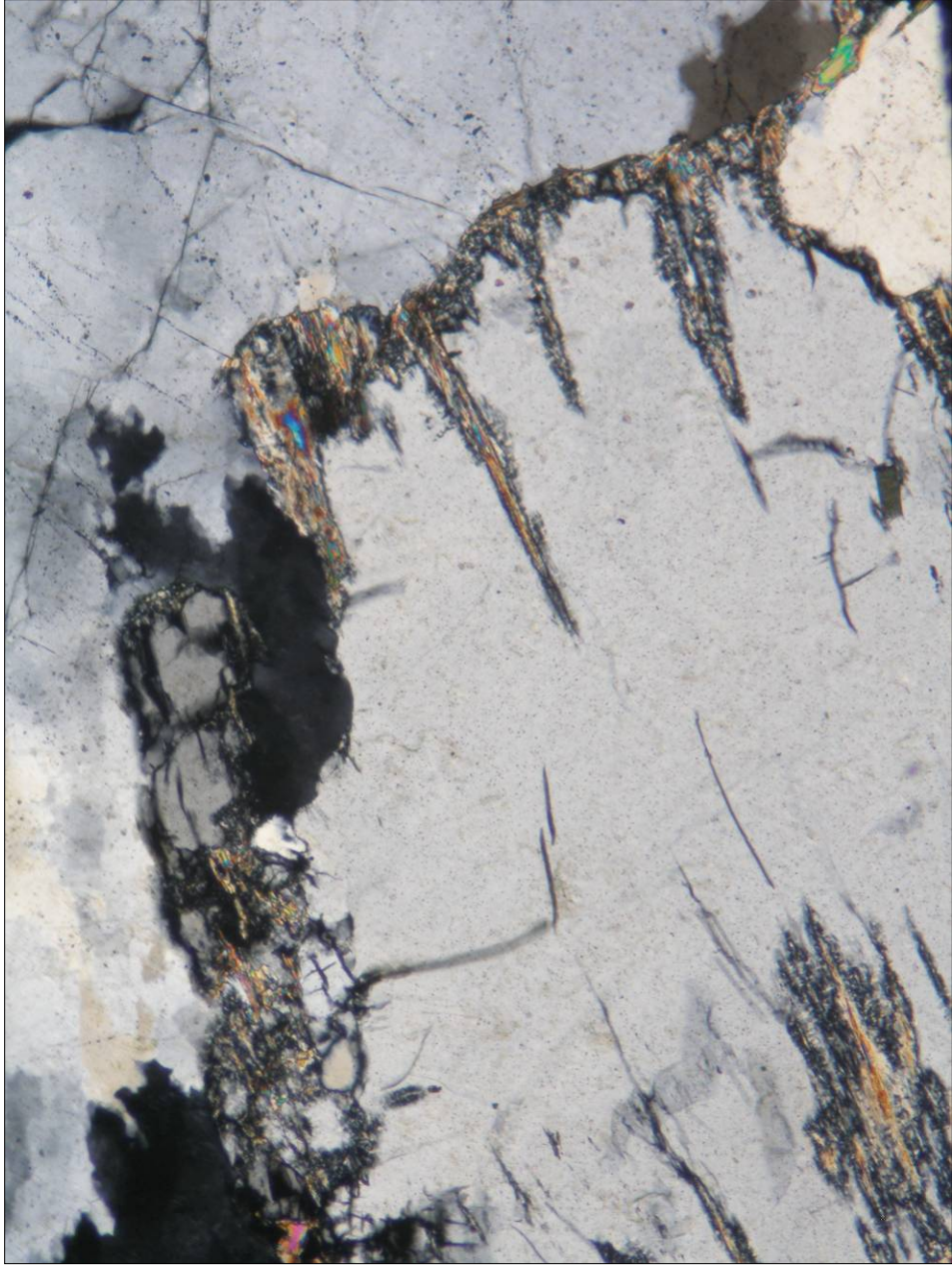




Cordierite (partly pinitized) in gneiss from Horní Bory, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





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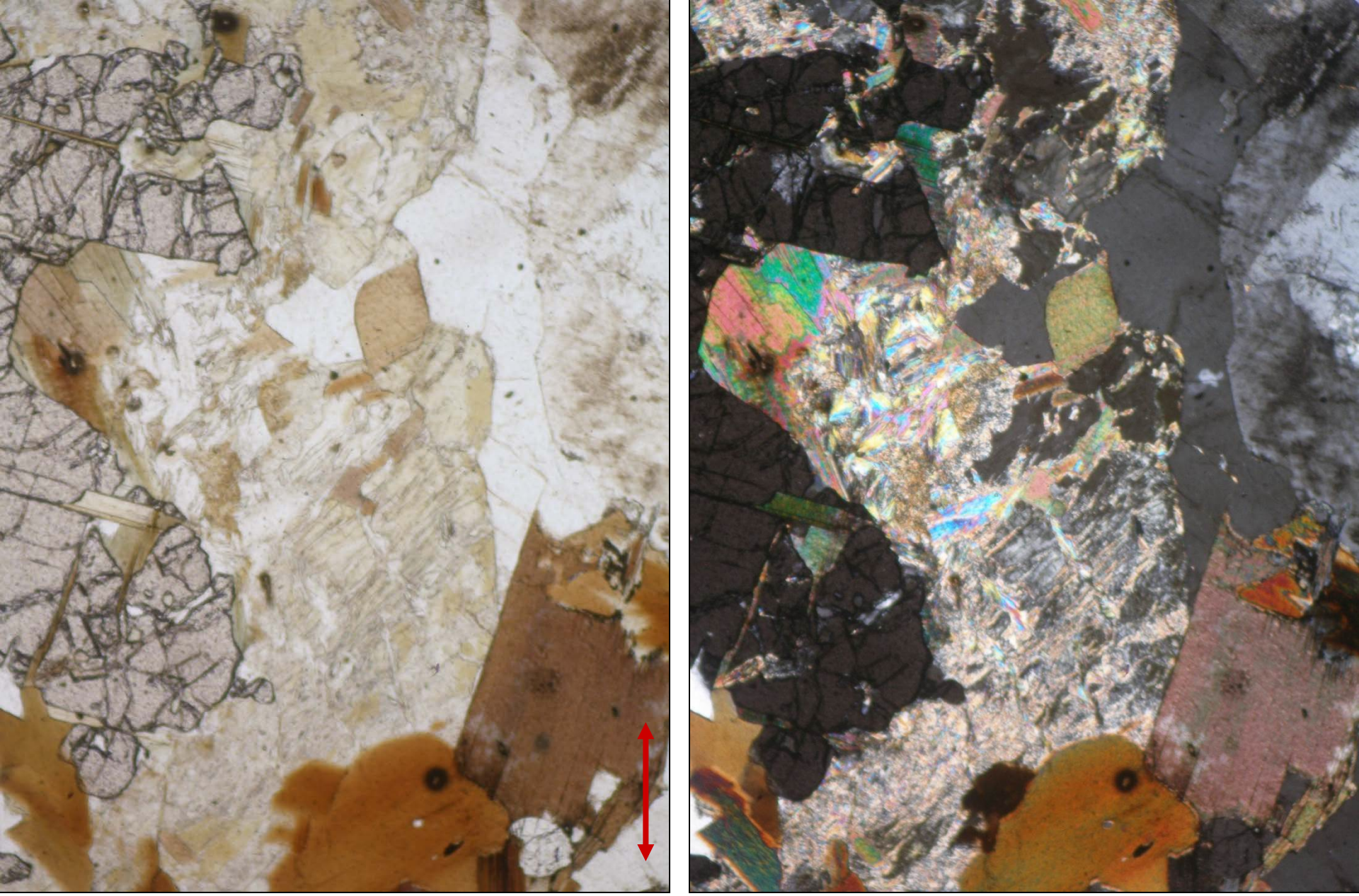
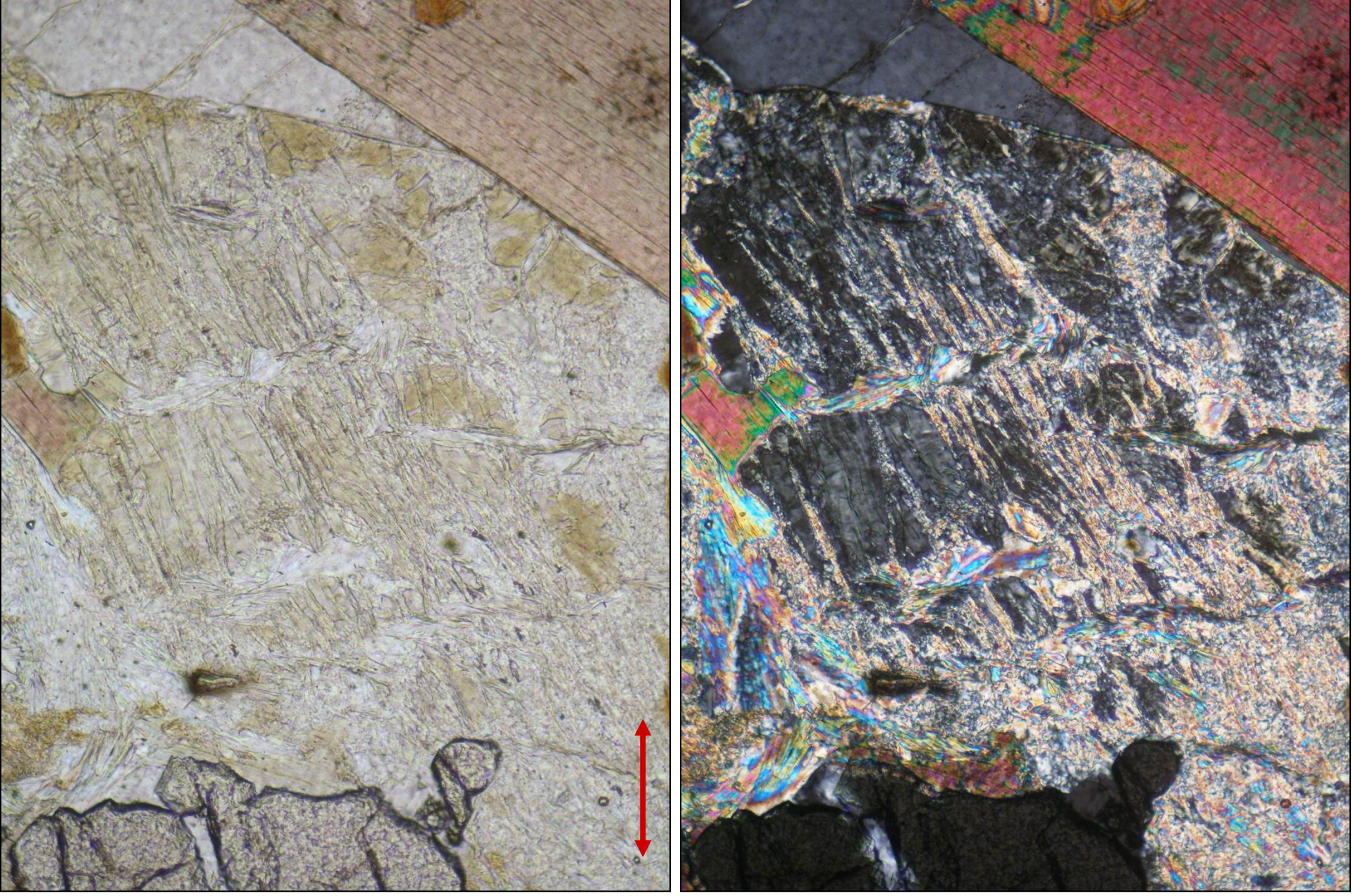
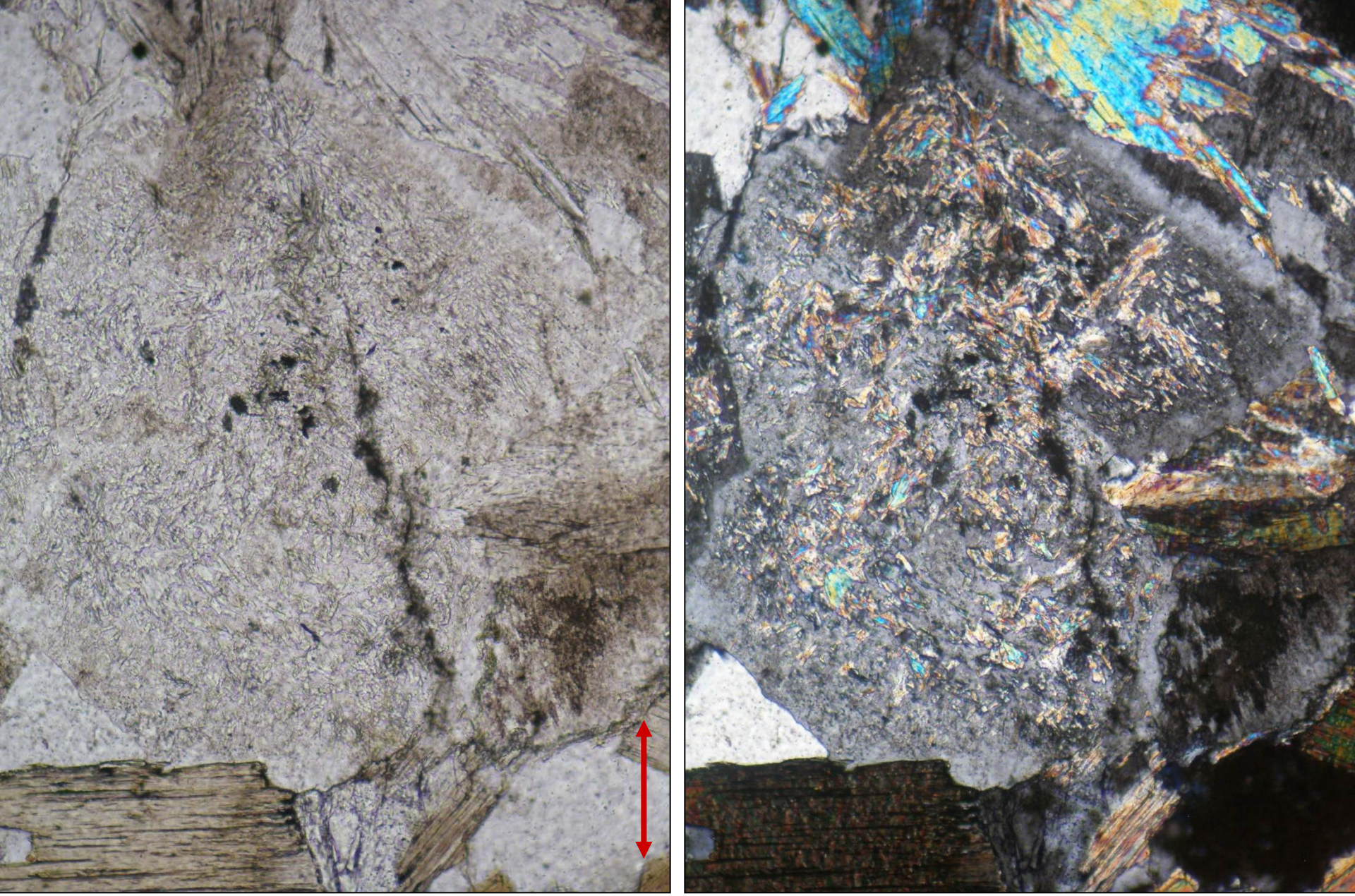


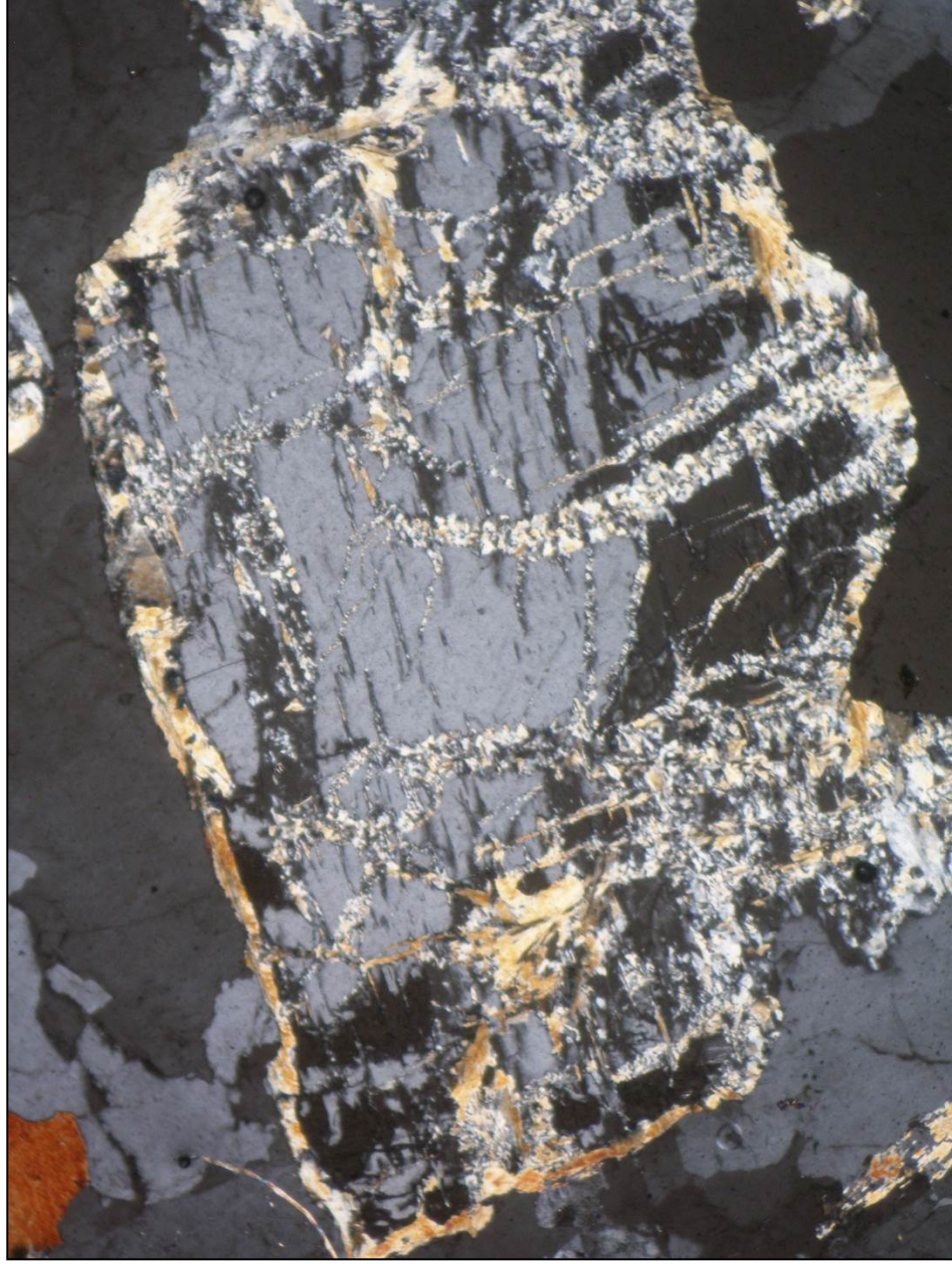
Cordierite (strongly pinitized) in gneiss from the Českomoravská vrchovina Highlands, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.2 mm. Photo: JiZi.



Cordierite (strongly pinitized) in gneiss from the Českomoravská vrchovina Highlands, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.9 mm. Photo: JiZi.



Cordierite (partly pinitized) in gneiss from the Českomoravská vrchovina Highlands, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.9 mm. Photo: JiZi.



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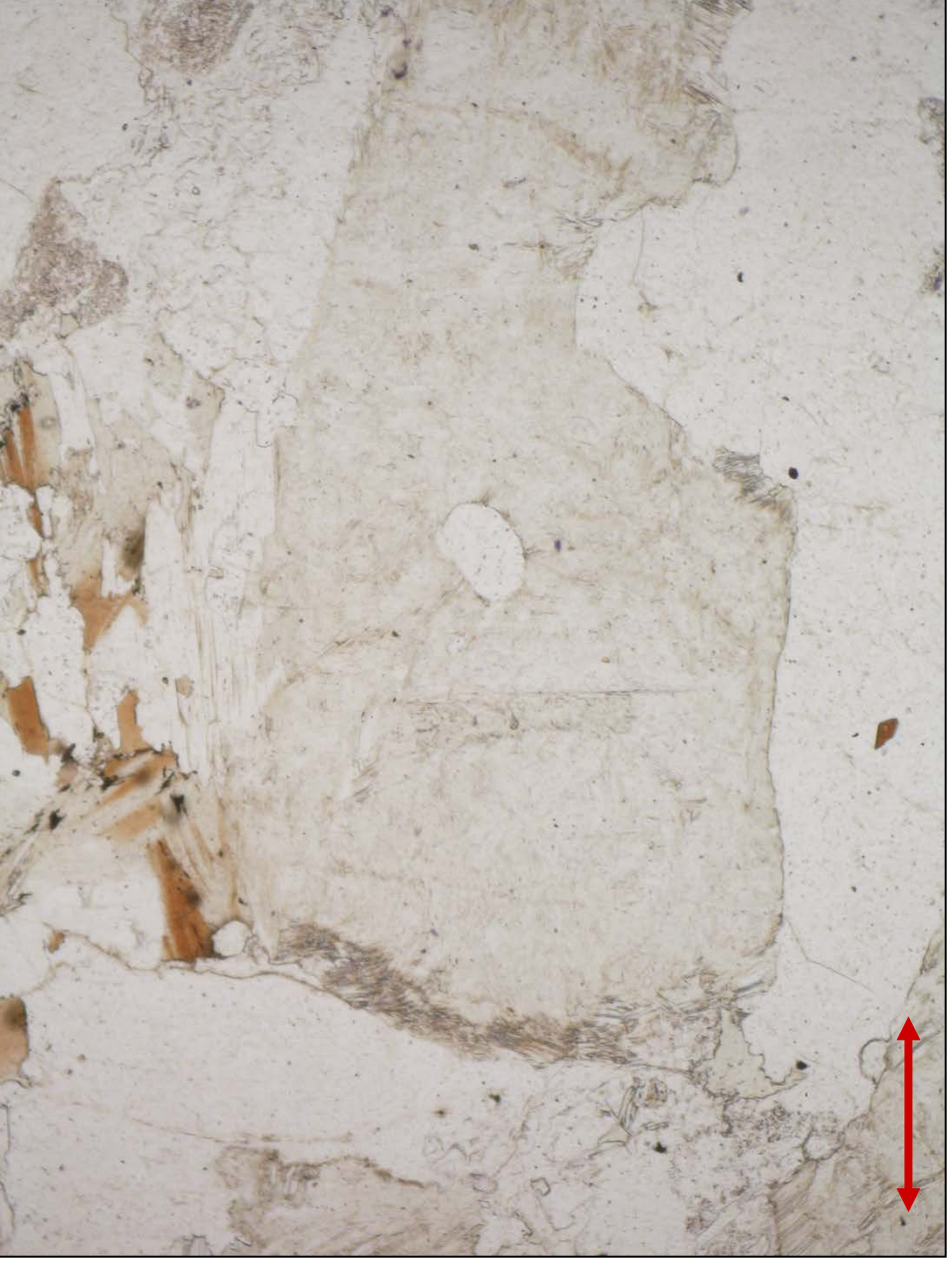

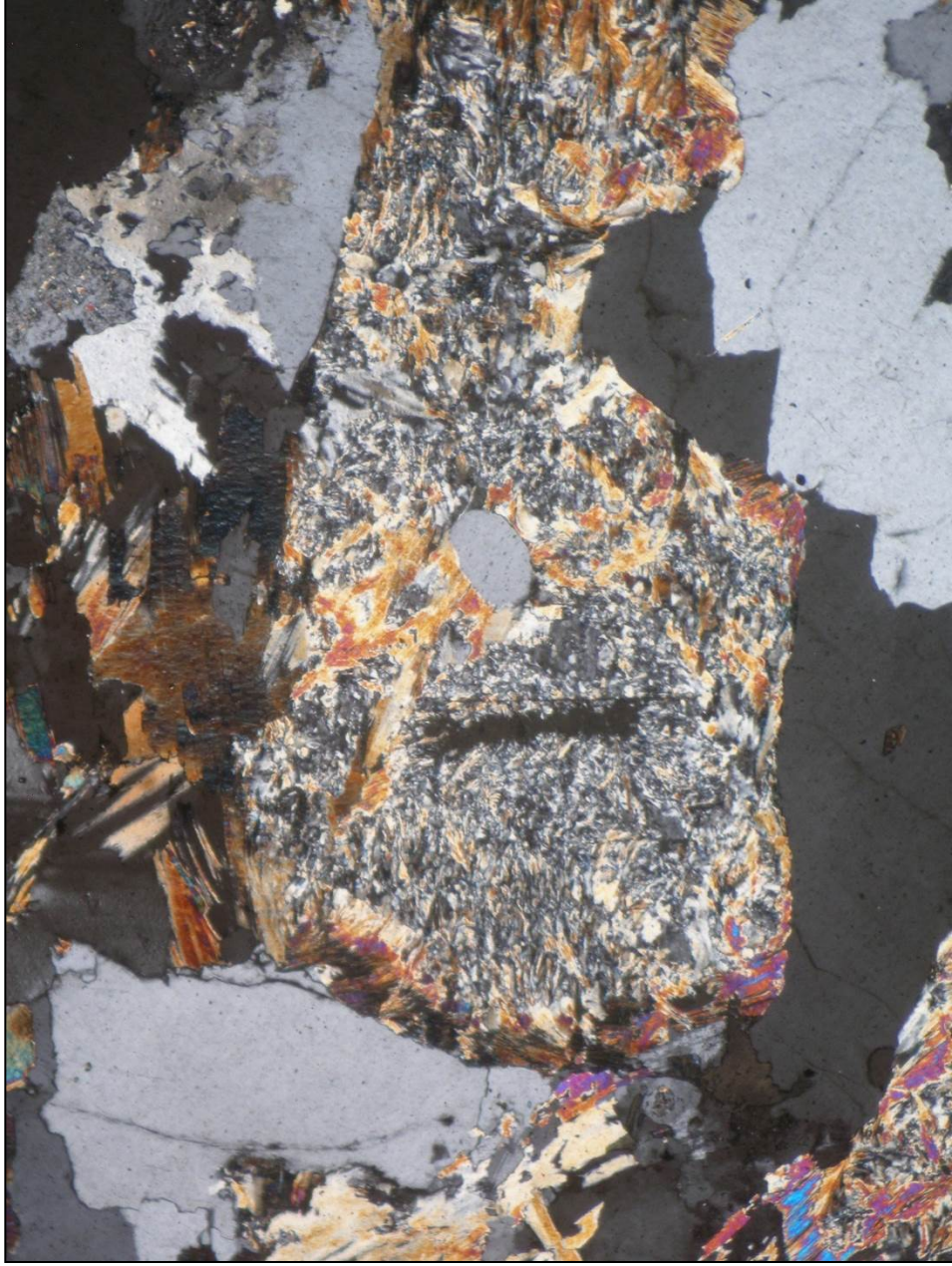

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