CHLORITE OF THE CLINOCHLORE–CHAMOSITE SERIES

Chemical formula: $Mg_5Al[(OH)_8|AlSi_3O_{10}]$ clinochlore $Fe_5Al[(OH)_8|AlSi_3O_{10}]$ chamosite

Crystal system: monoclinic or triclinic

Color in thin section: the color and pleochroism depend on chlorite compositions

Fe-poor (optically positive): X = Y = green, pale green, brownish green
Z = colorless, pale green, pale yellowish green

Fe-rich (optically negative): X = colorless, pale green, pale yellowish green
Y = Z = pale green, green, olive-green

Form: plates, scales, tabular crystals with a roughly hexagonal outline

Cleavage: perfect on {001}

Indices of refraction: n_α = 1.55 – 1.67 n_β = 1.55 – 1.69 n_γ = 1.55 – 1.69

Birefringence: 0.0 – 0.015

Optic sign: biaxial positive or negative

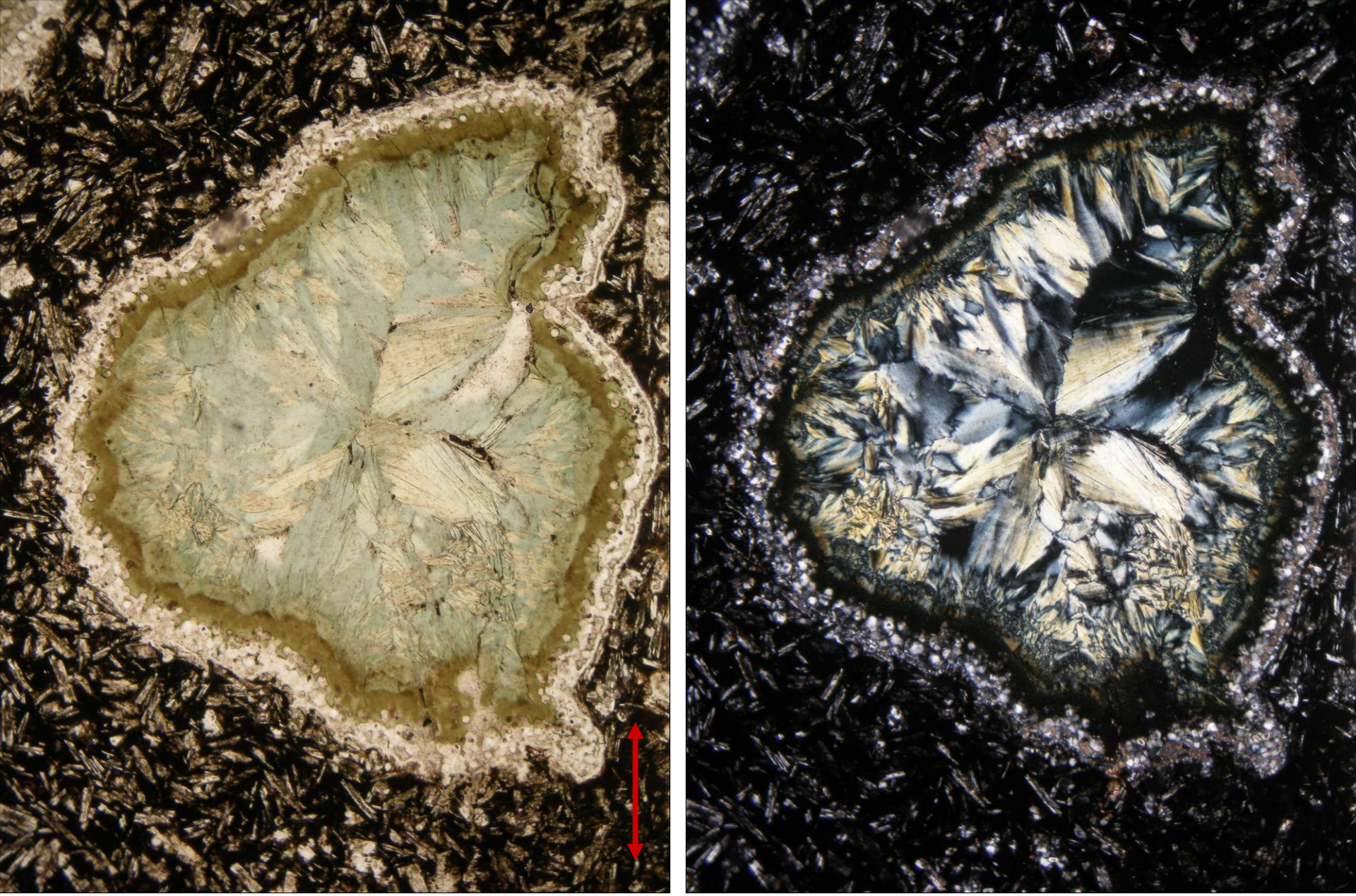
Sign of elongation: negative (if optically positive) or positive (if optically negative)

Alteration: may be altered to clay minerals, or iron oxides

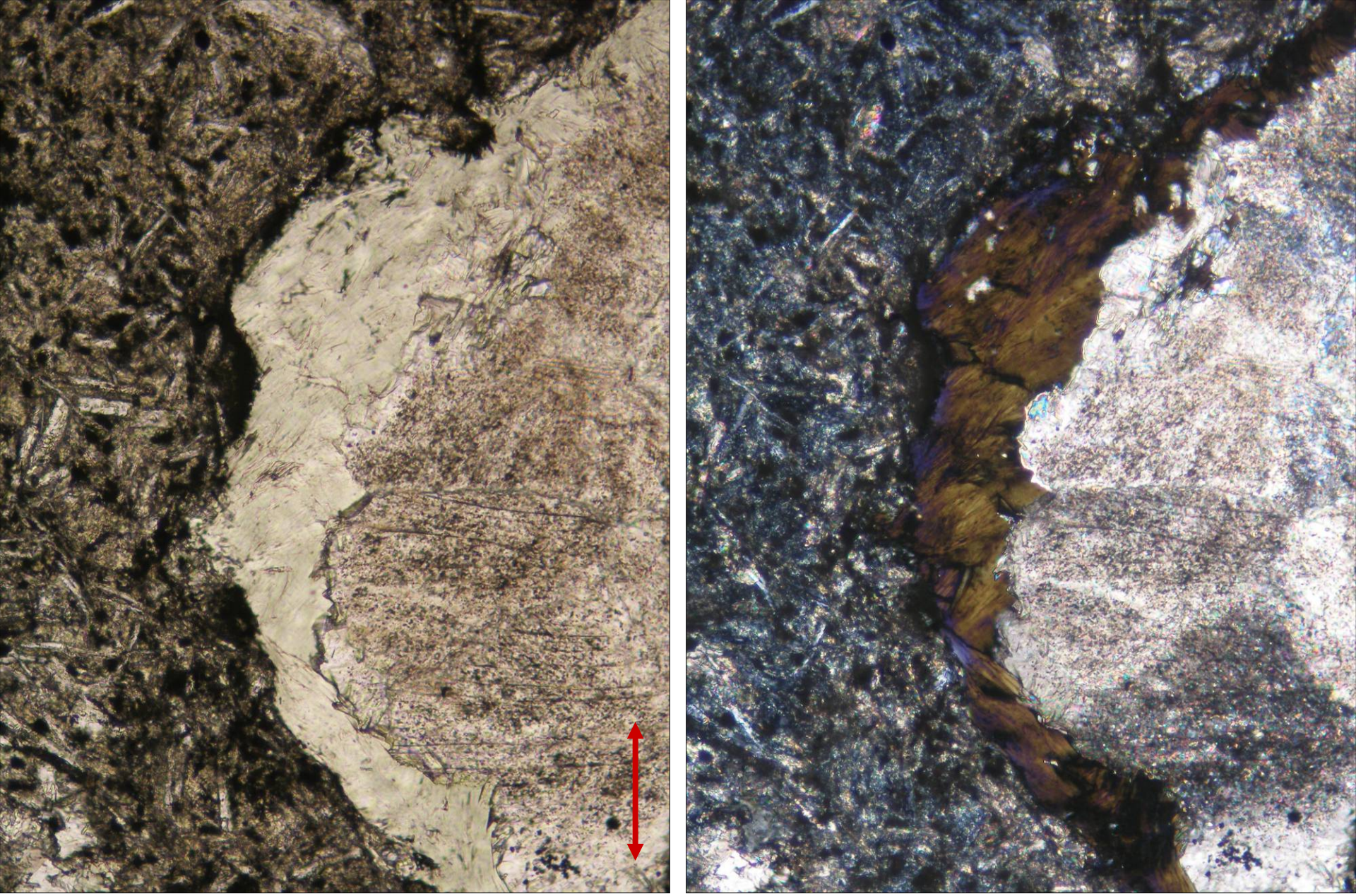
Occurrence: phyllite, chlorite schist, greenschist, iron ores of the SEDEX type, amygdules in hydrothermally altered volcanites; a product of the alteration of mafic minerals (biotite, amphibole, pyroxene)

Similar minerals in thin sections: serpentine group minerals (usually lower indices of refraction, usually less pleochroic)

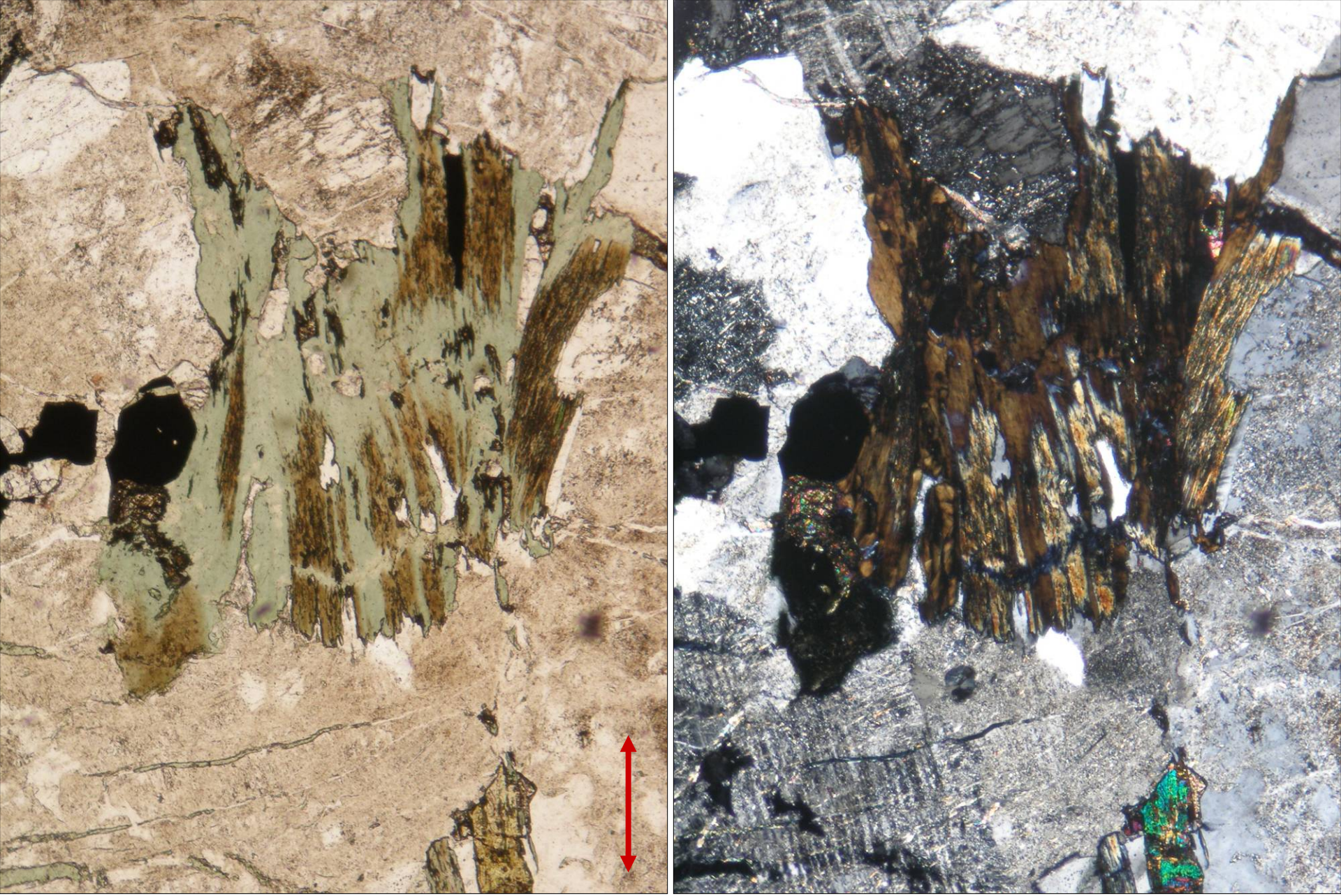
Note: anomalous brownish interference colors in optically positive chlorites, anomalous bluish or purplish colors in optically negative chlorites; some chlorites may be essentially isotropic



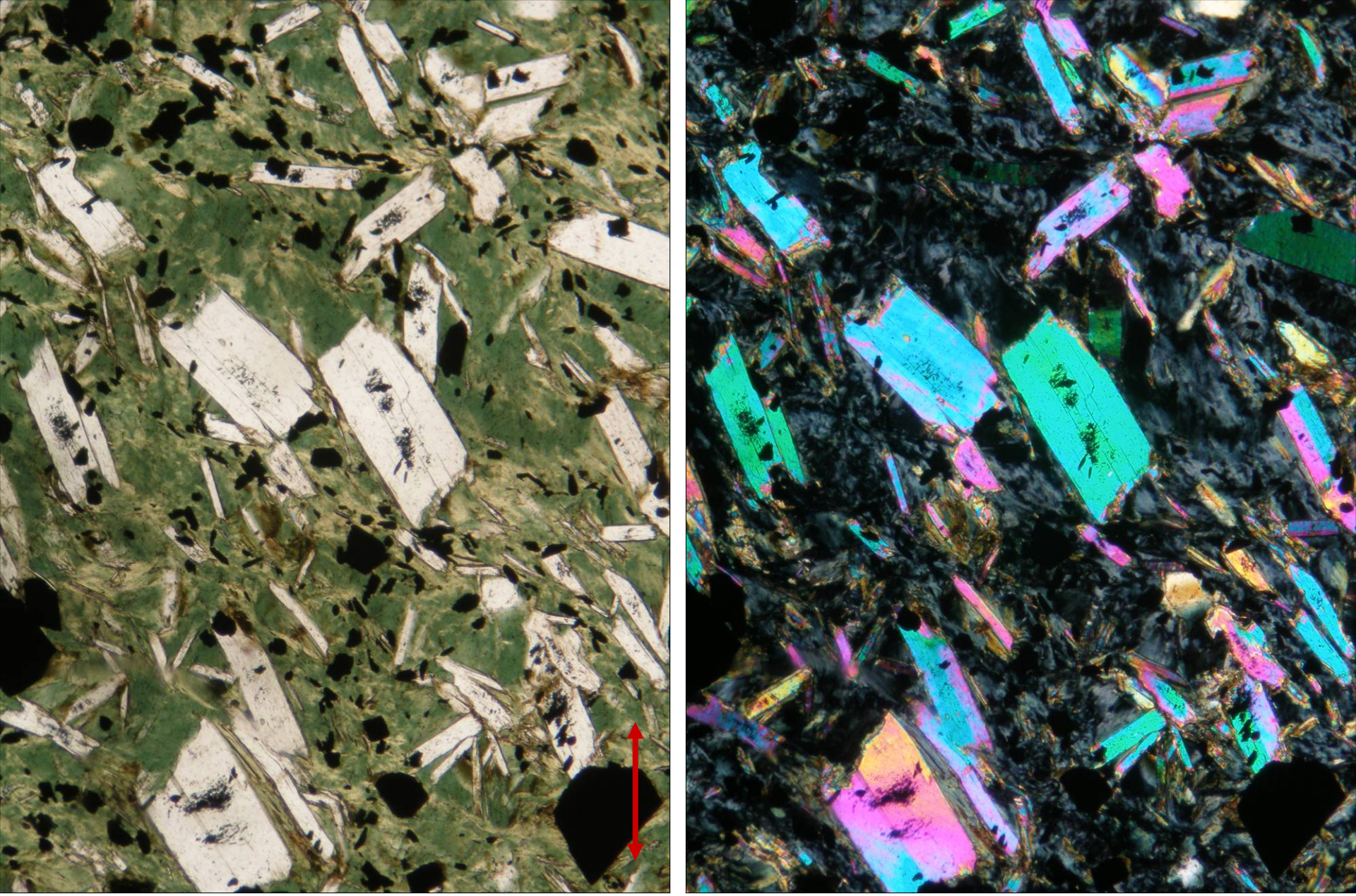
Chlorite in a vesicle in palaeobasalt from Bezděčín, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.5 mm. Photo: JiZi.



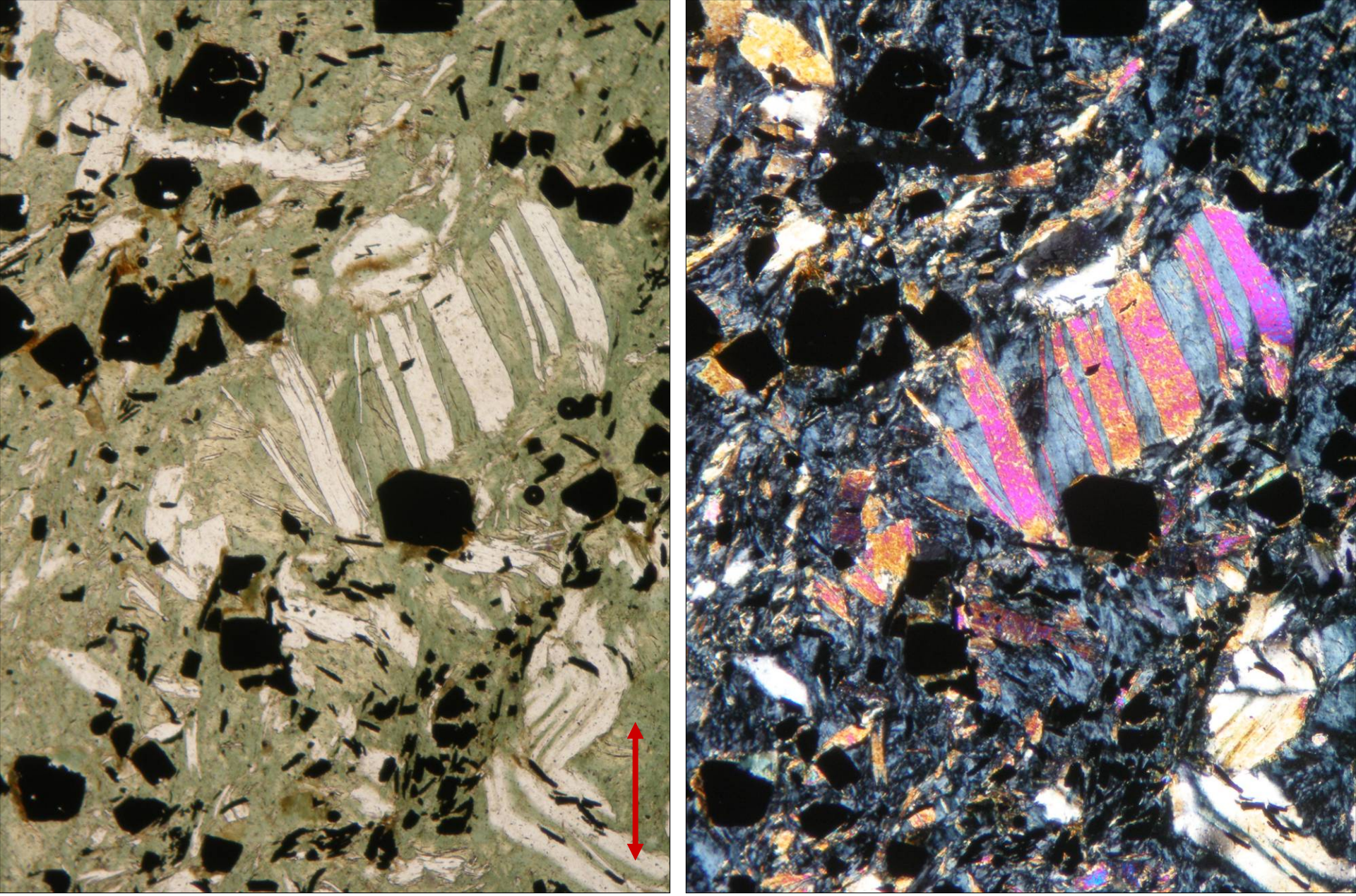
Calcite and chlorite in a vesicle in spilite from Moravský Beroun, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.7 mm. Photo: JiZi.



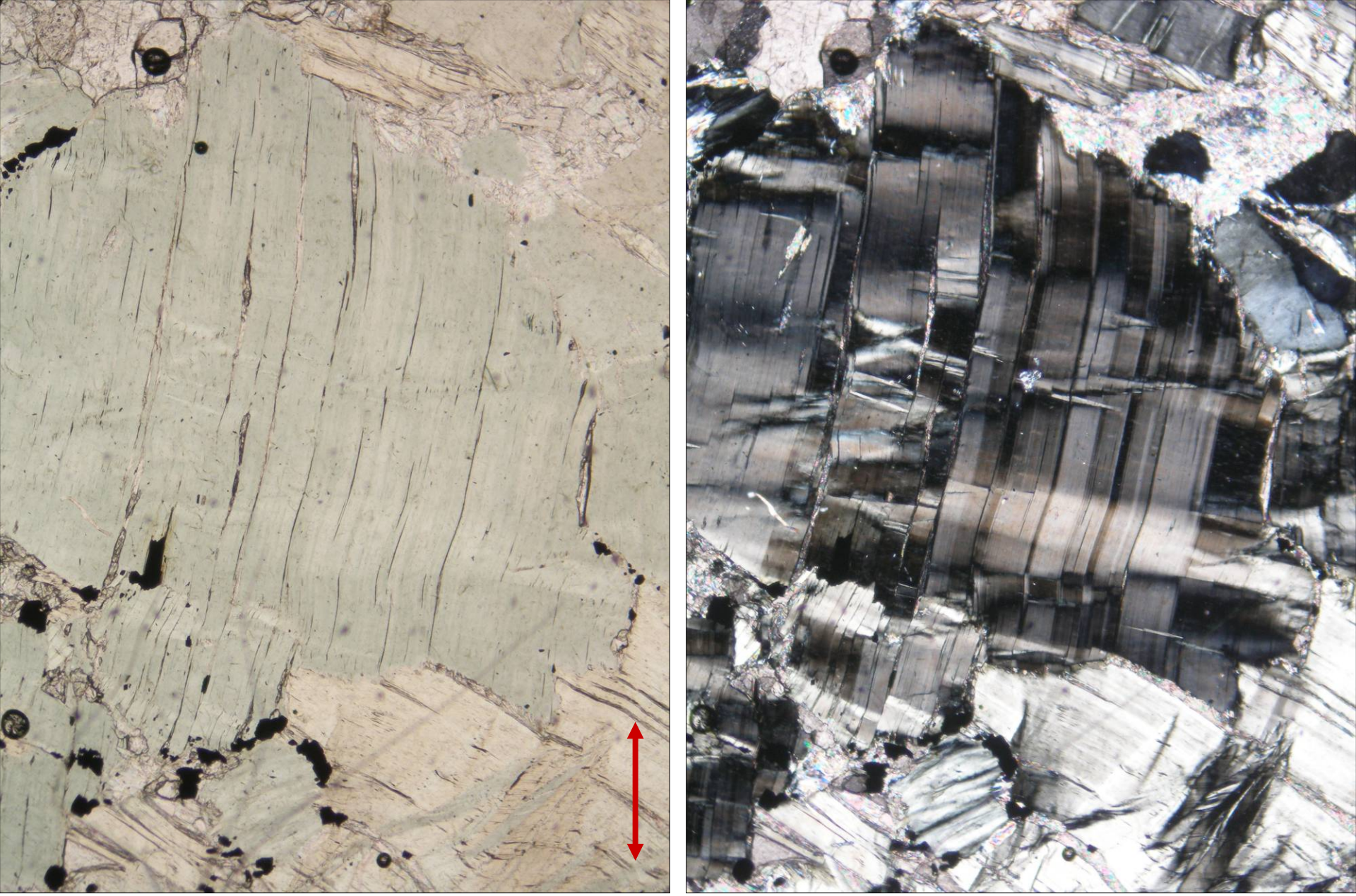
Chlorite with biotite residue in granodiorite from Brno-Obřany, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.5 mm. Photo: JiZi.



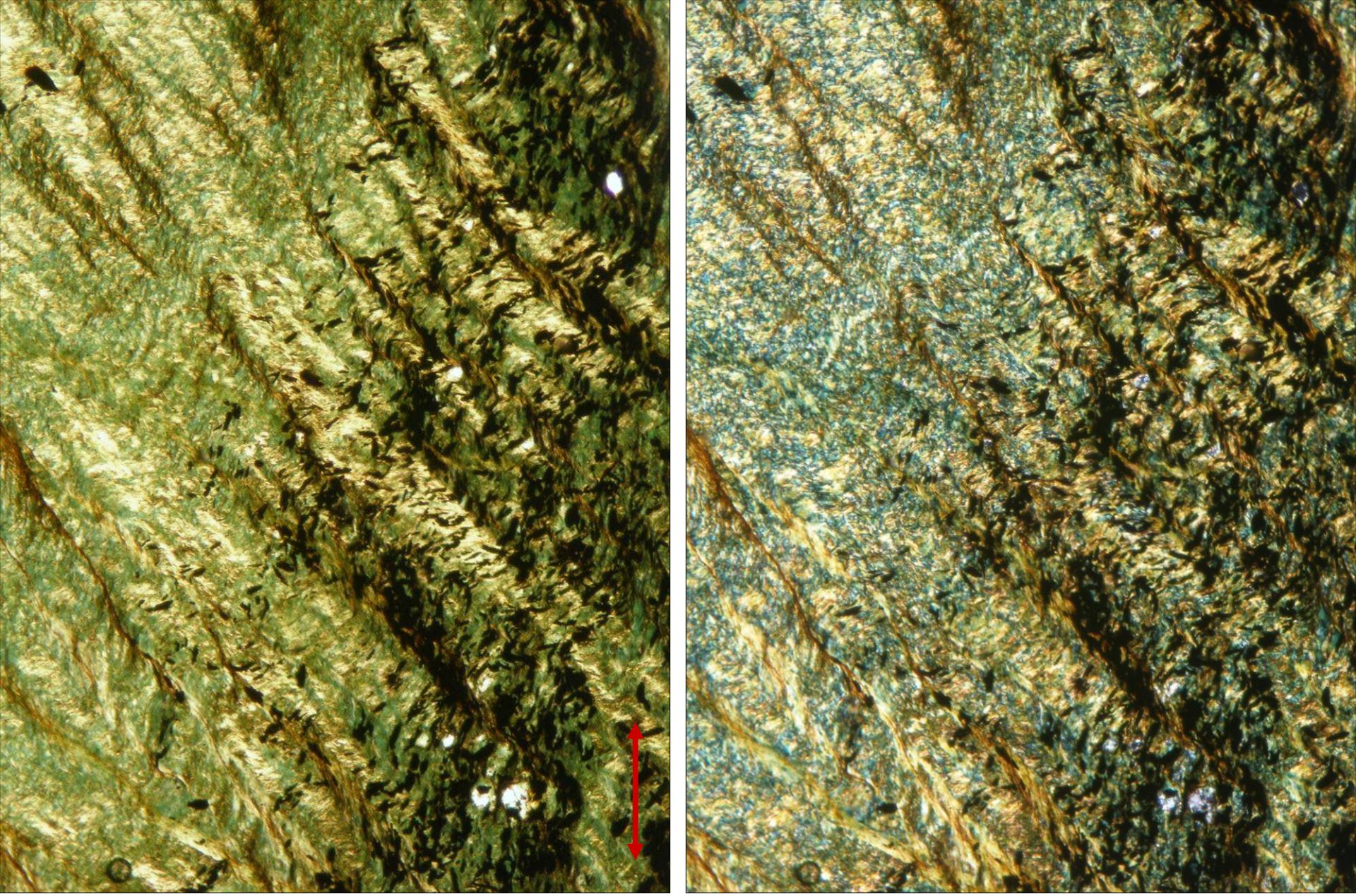
Chlorite, muscovite and magnetite in iron ore from Malá Morávka, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.8 mm. Photo: JiZi.



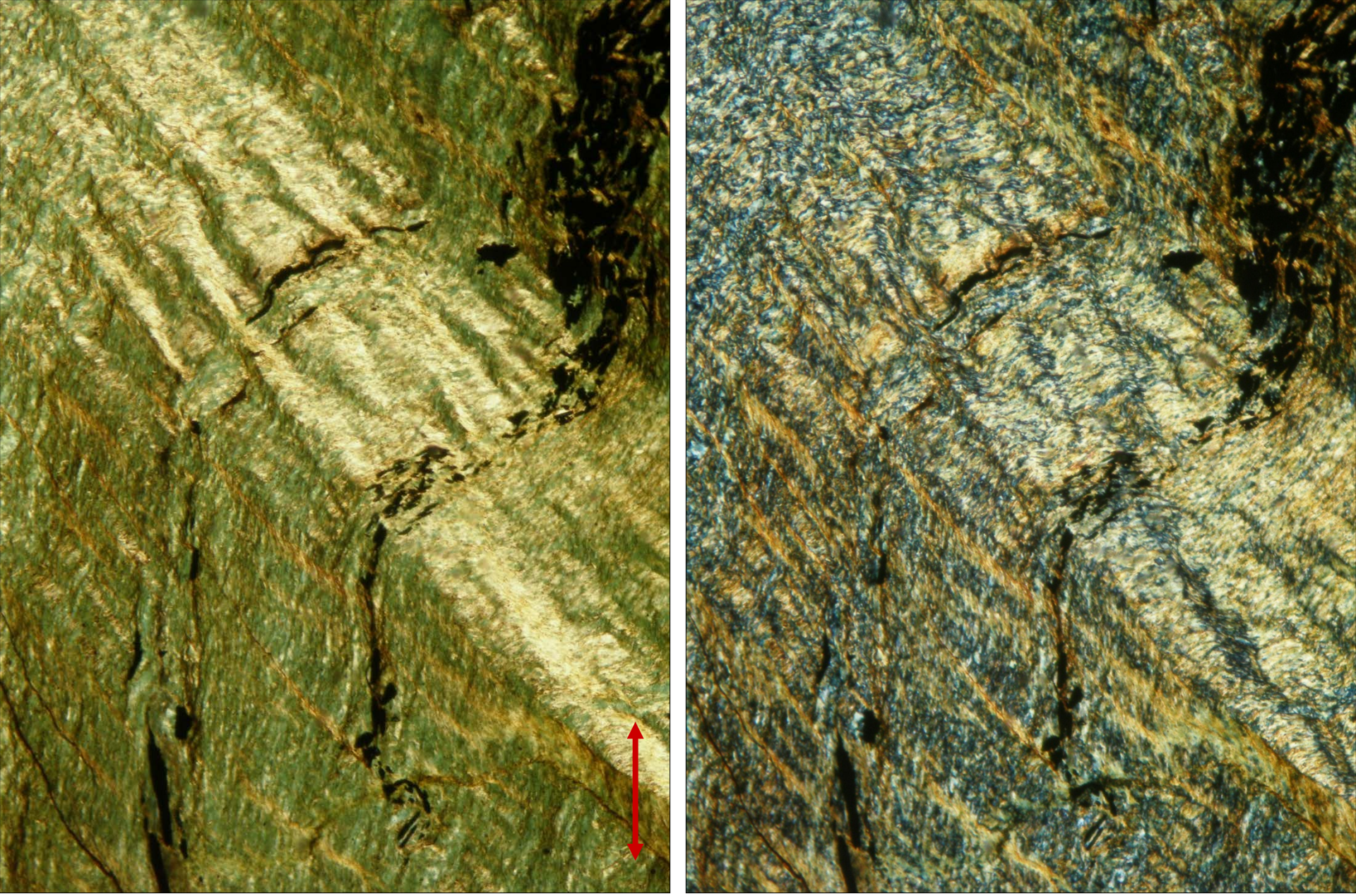
Chlorite, muscovite and magnetite in iron ore from Malá Morávka, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.8 mm. Photo: JiZi.



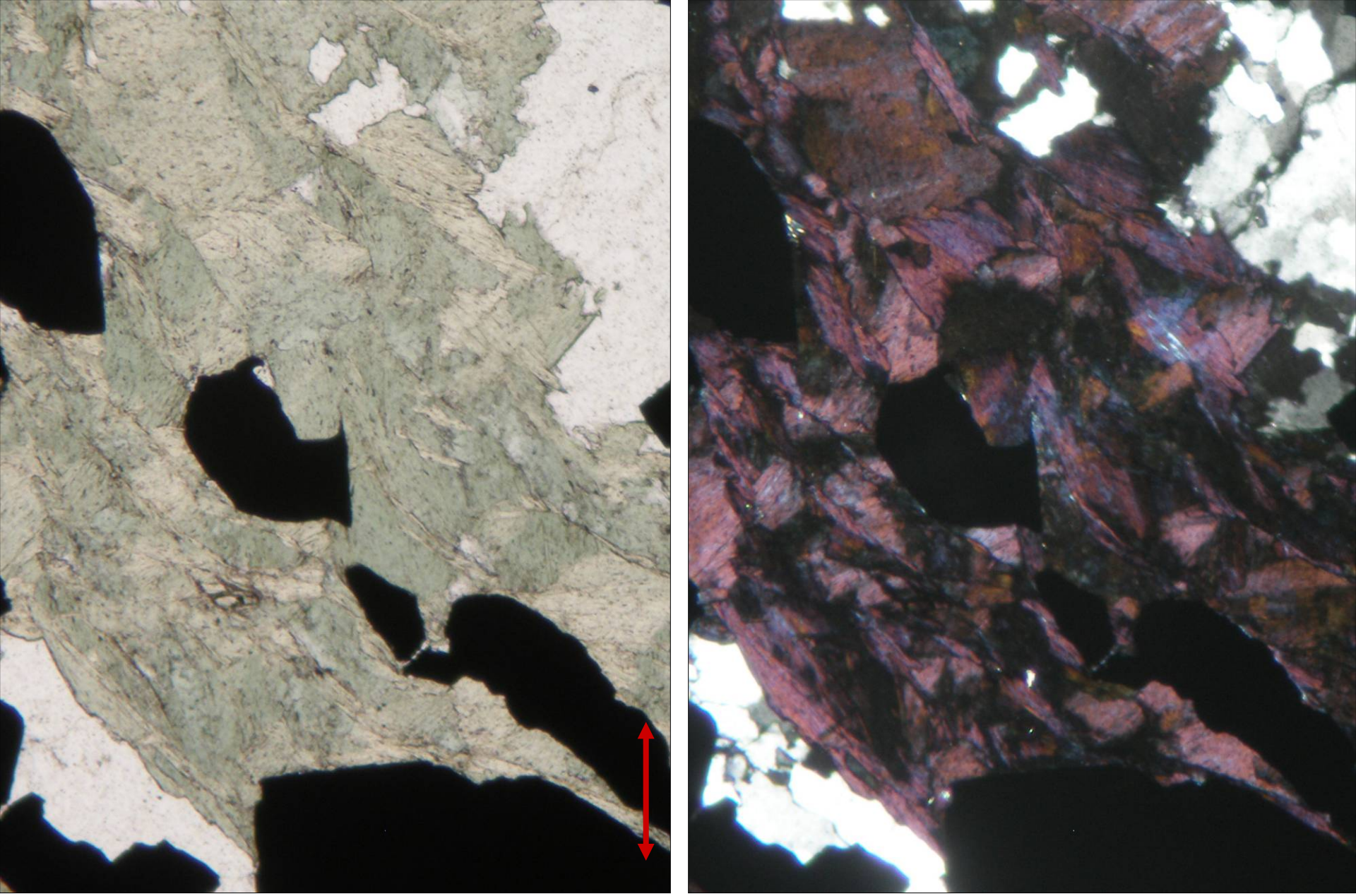
Clinochlore in soapstone from Sobotín, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.5 mm. Photo: JiZi.



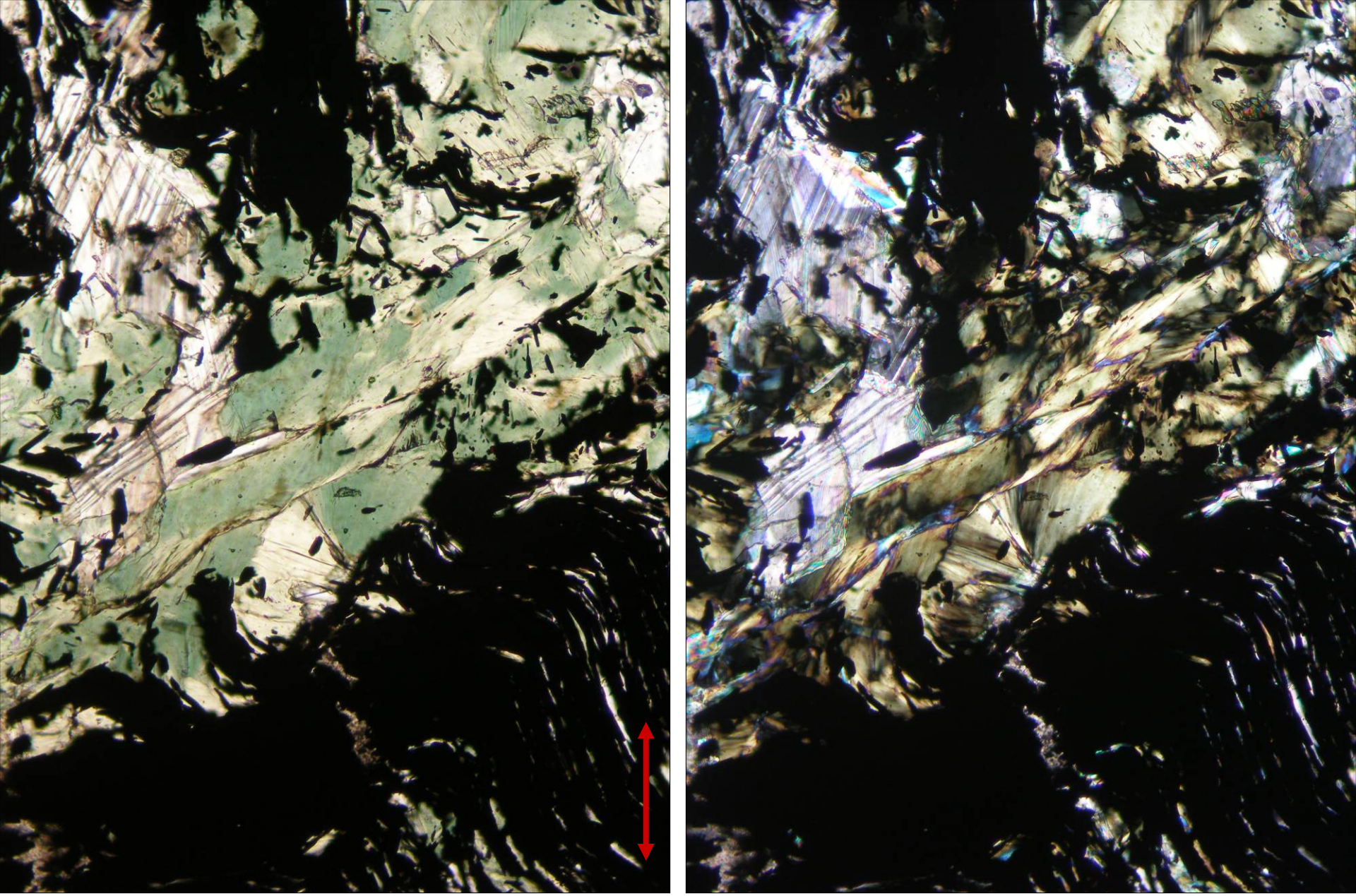
Chlorite, muscovite and opaque minerals (magnetite, ilmenite) in iron ore from Malá Morávka, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.2 mm.
Photo: JiZi.



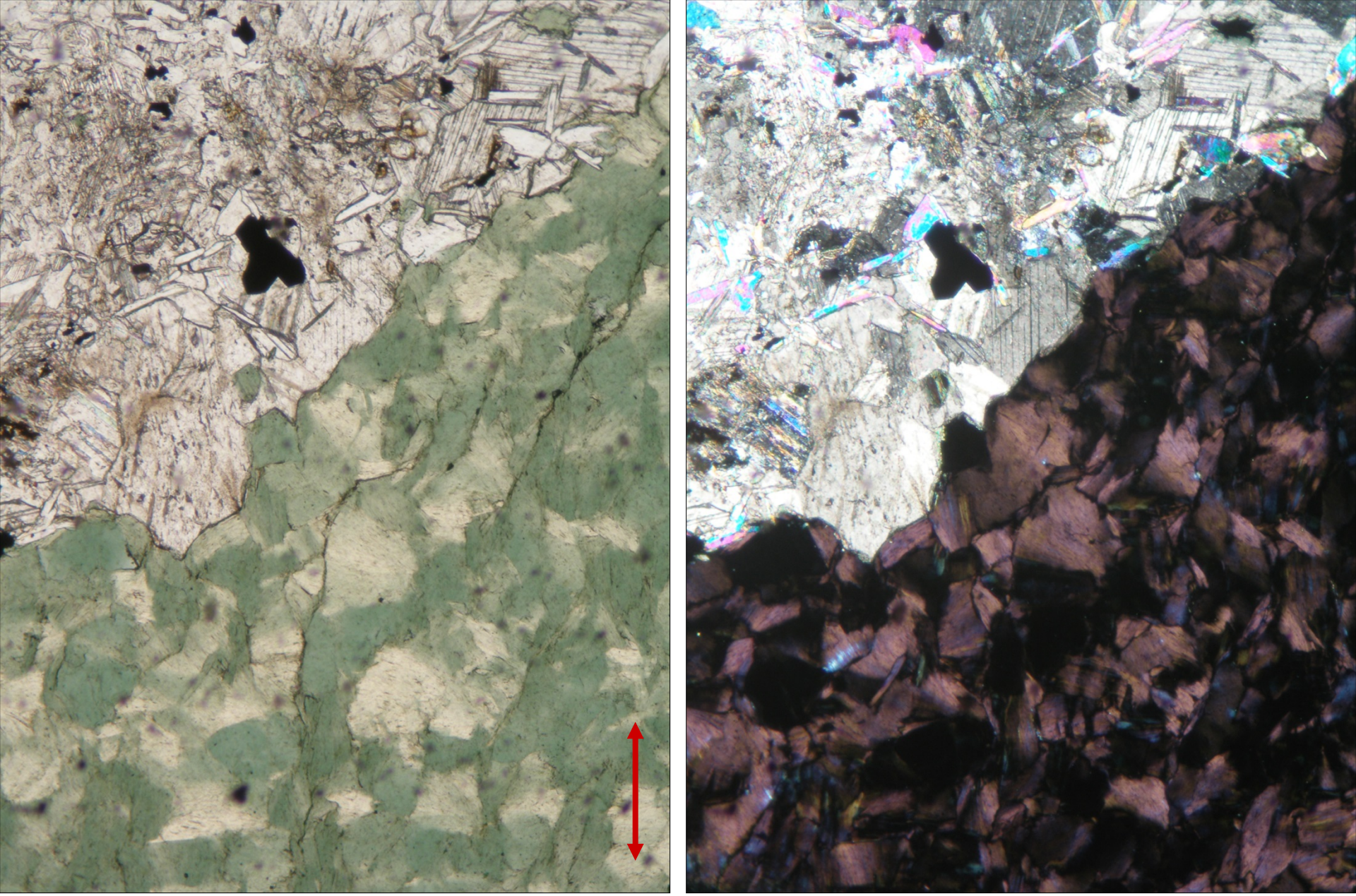
Chlorite, muscovite and opaque minerals (magnetite, ilmenite) in iron ore from Malá Morávka, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.2 mm. Photo: JiZi.



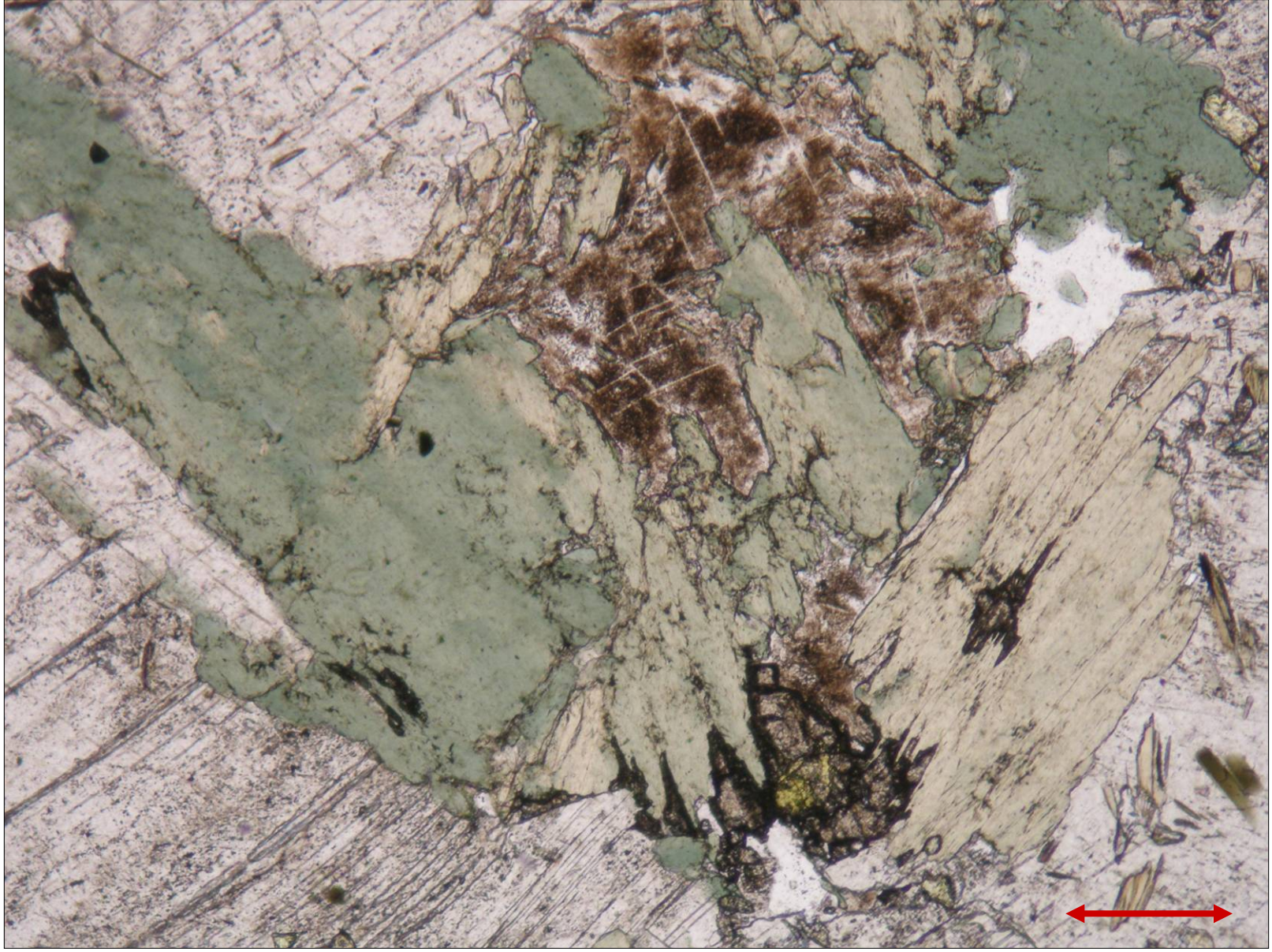
Chlorite with pyrite in sulphide ore from Zlaté Hory, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.0 mm. Photo: JiZi.



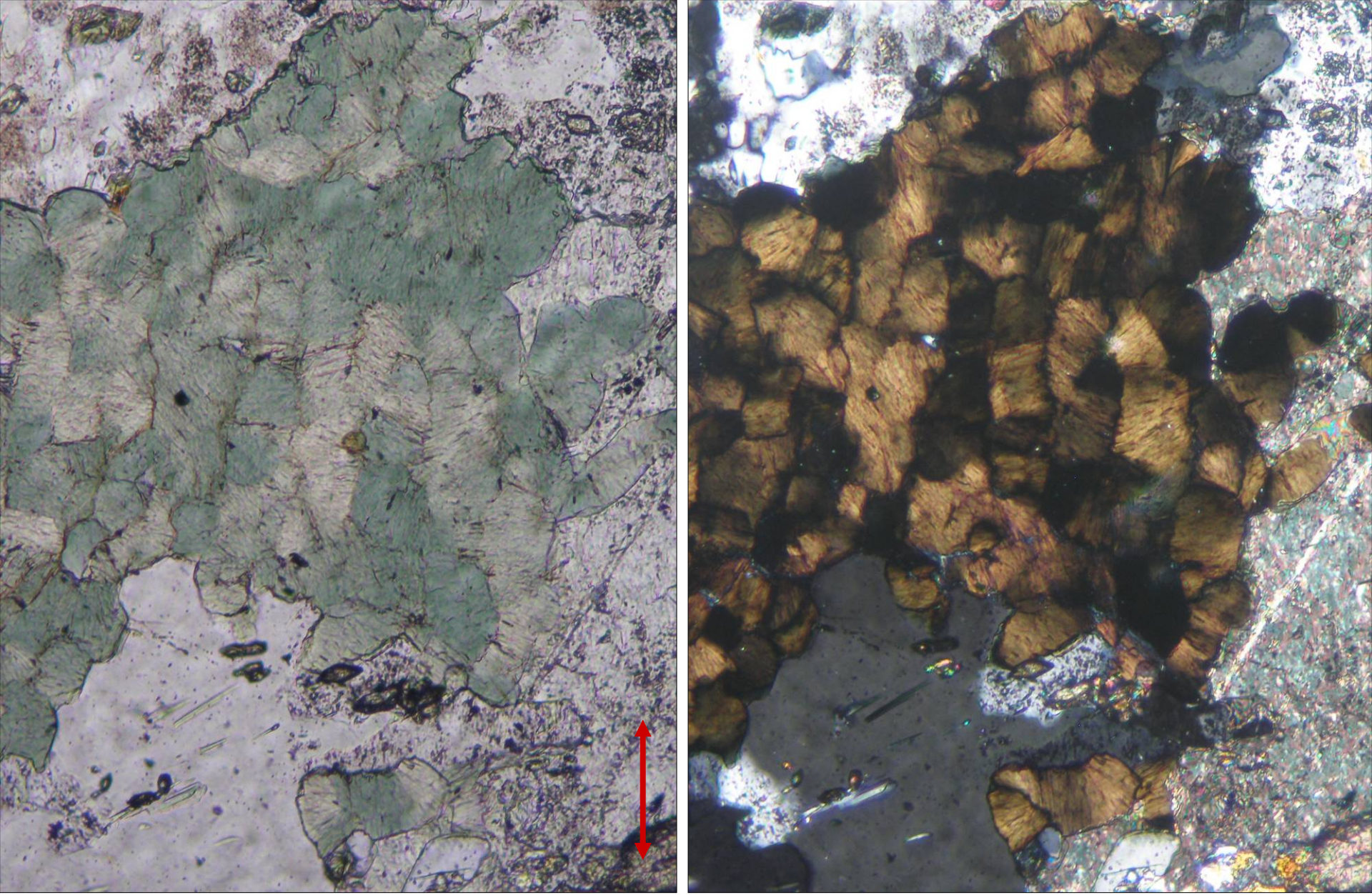
Chlorite with calcite in iron ore from Břevenec, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.8 mm. Photo: JiZi.



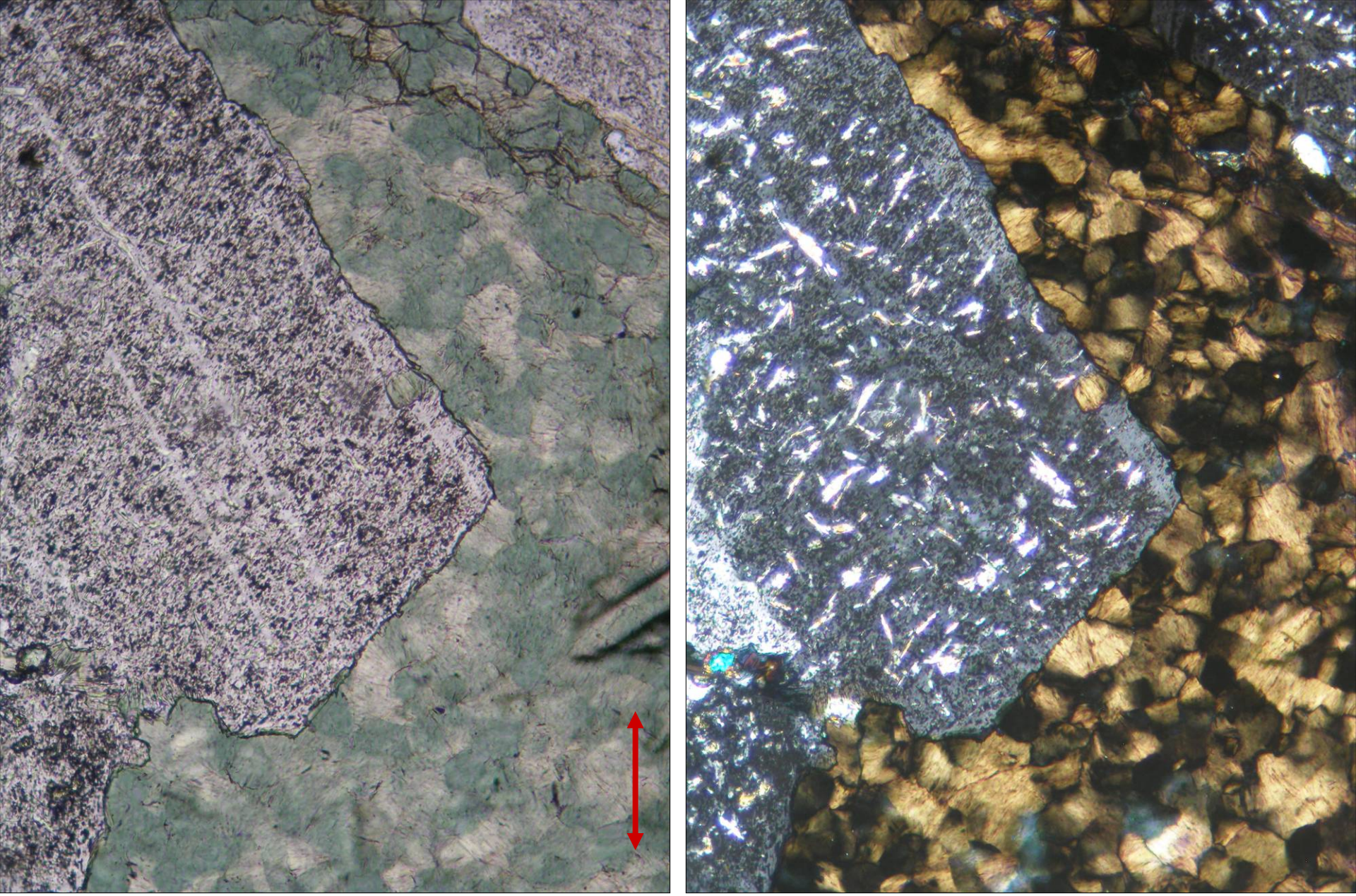
Chlorite in iron ore from Drakov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.



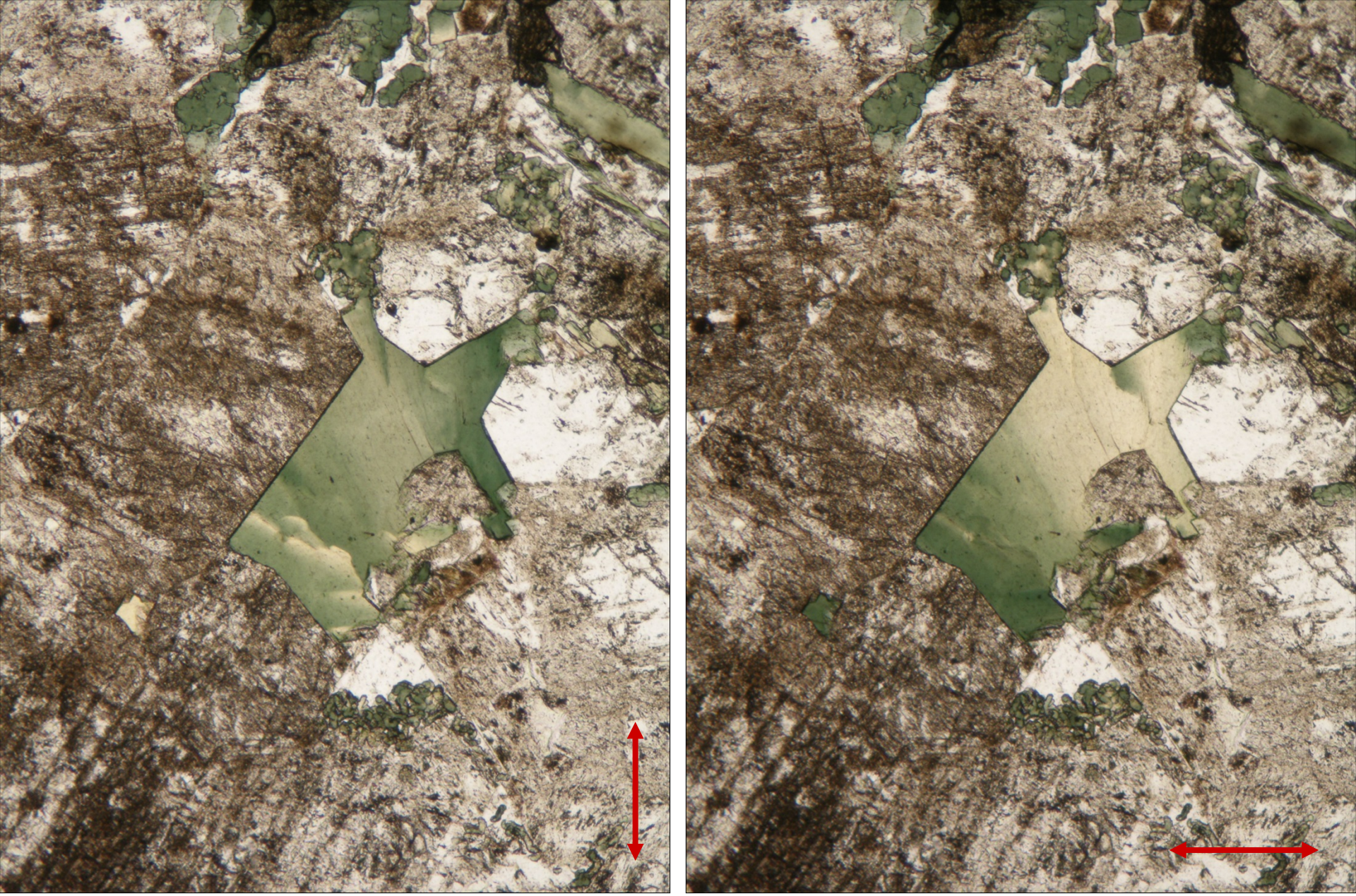
Strongly pleochroic chlorite with calcite, altered feldspar, quartz and epidote in the Alpine-type vein from Krásné near Hraběšice, the Czech Republic; PPL. Width of the field of view is ca. 2.2 mm. Photo: JiZi.



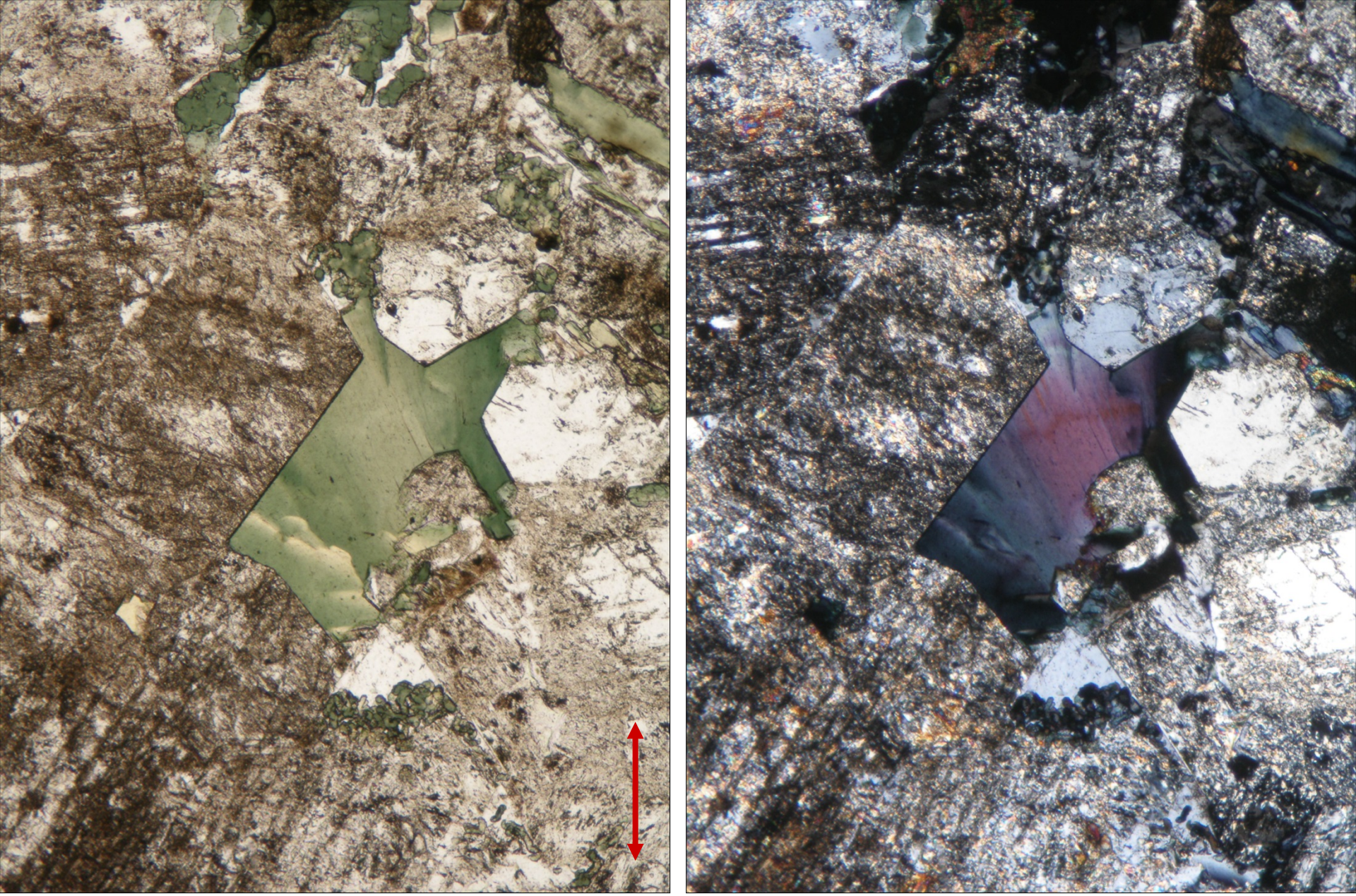
Chlorite in the Alpine-type vein from Krásné near Hraběšice, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.5 mm. Photo: JiZi.



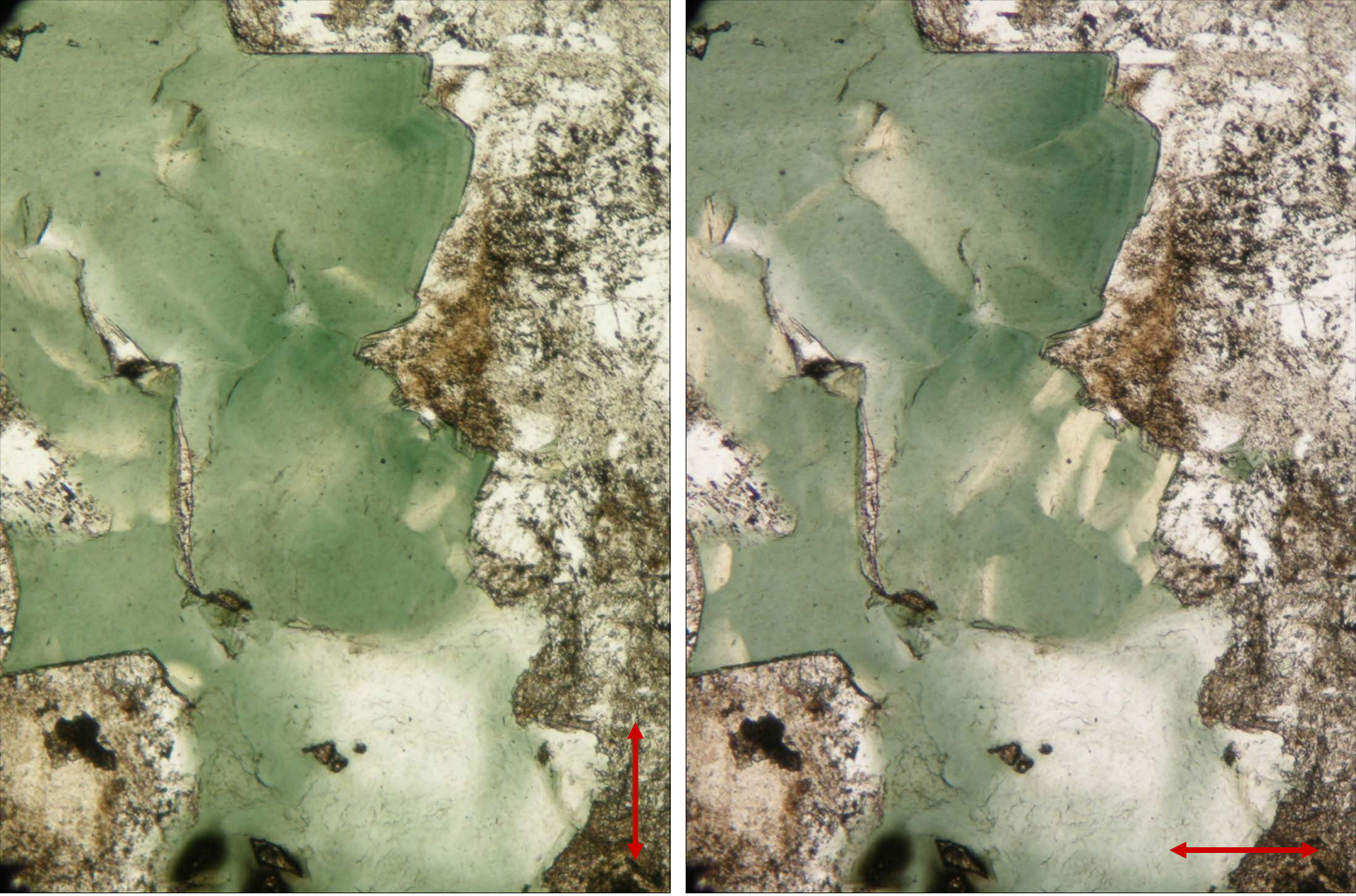
Chlorite and altered orthoclase in the Alpine-type vein from Krásné near Hraběšice, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.8 mm. Photo: JiZi.



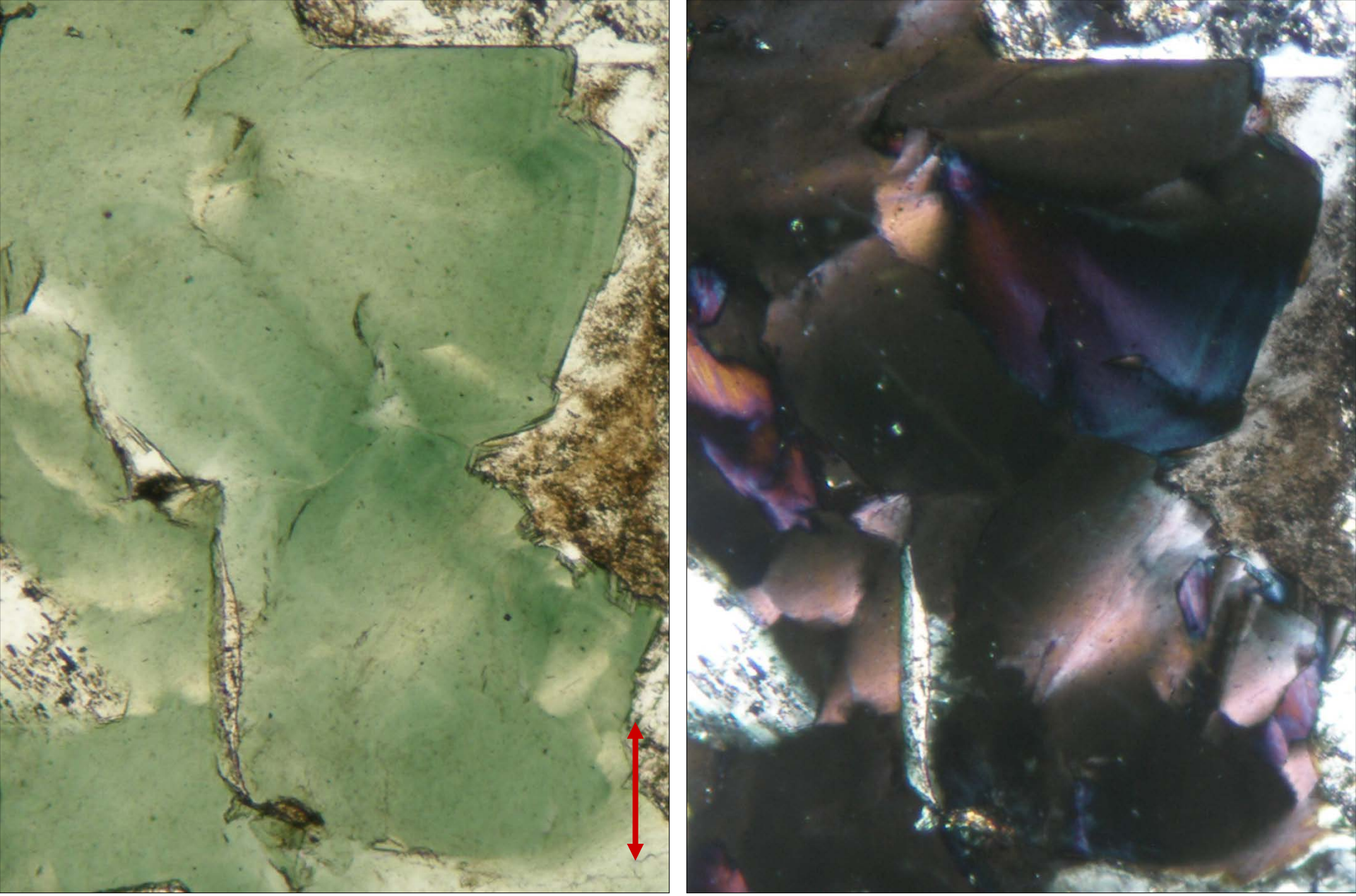
Pleochroism of chlorite in pegmatite from Mirošov, the Czech Republic; PPL. Width of fields of view is ca. 1.7 mm. Photo: JiZi.



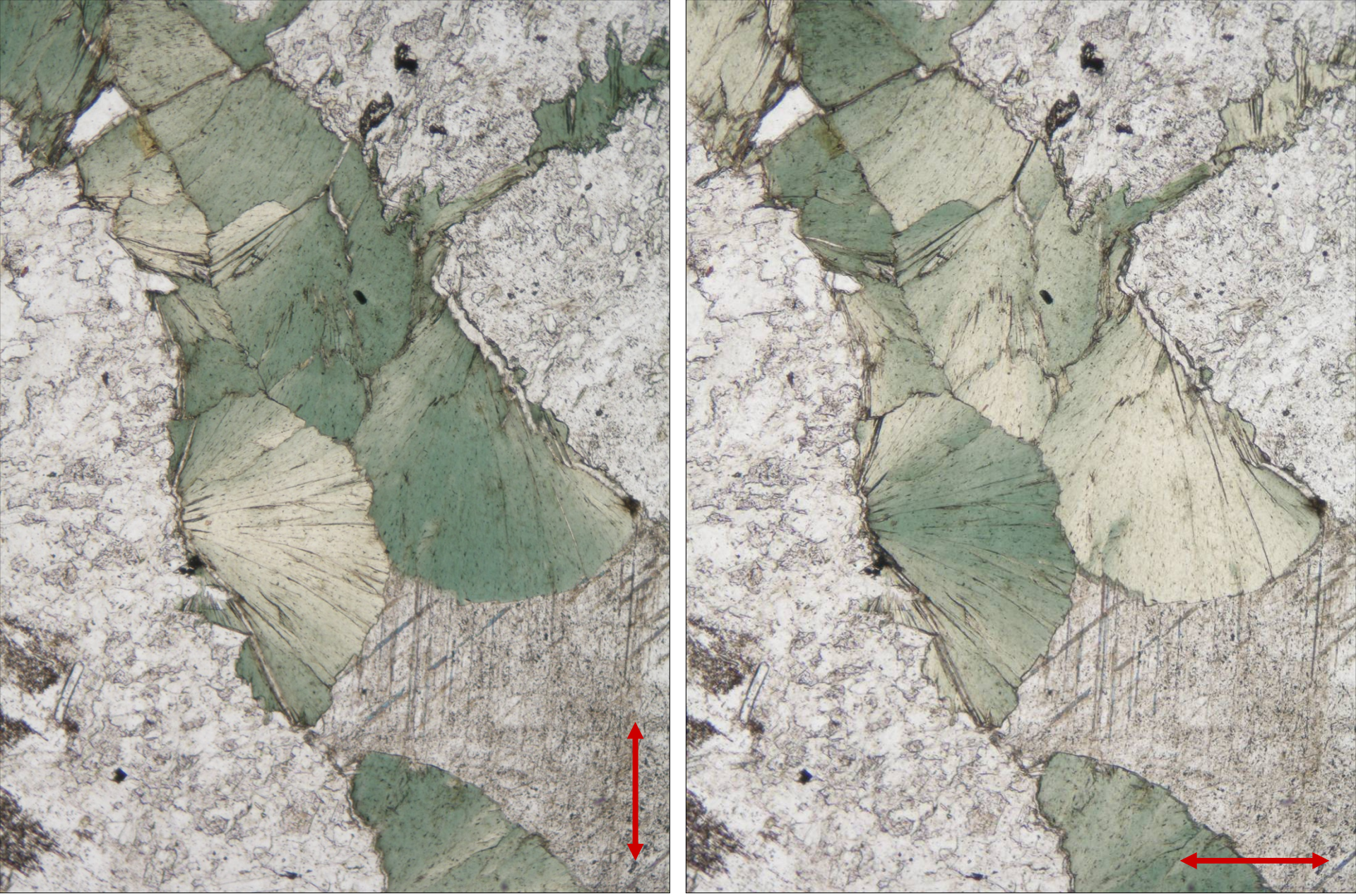
Chlorite in pegmatite from Mirošov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.



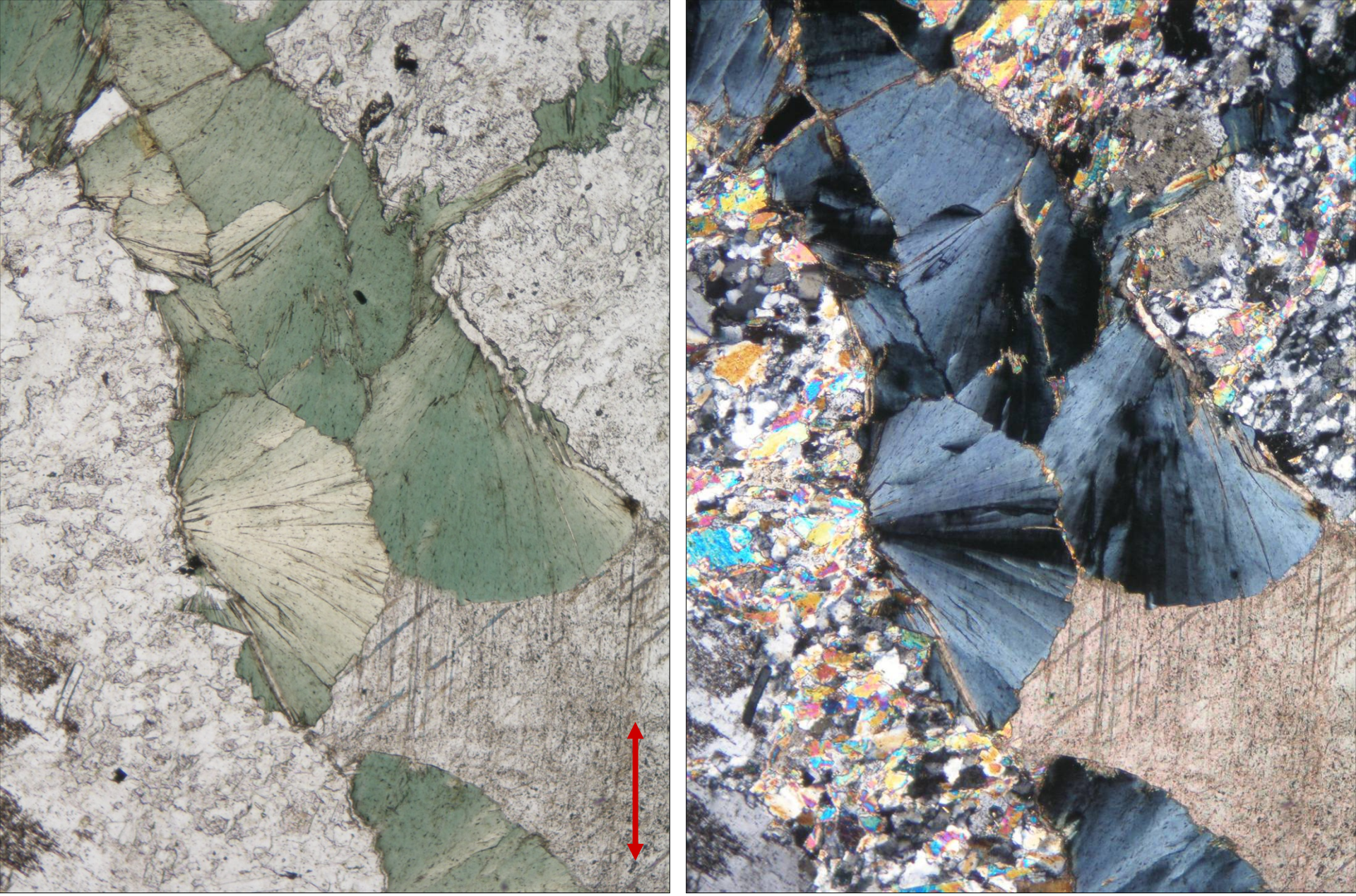
Pleochroism of chlorite in pegmatite from Mirošov, the Czech Republic; PPL. Width of fields of view is ca. 0.8 mm. Photo: JiZi.



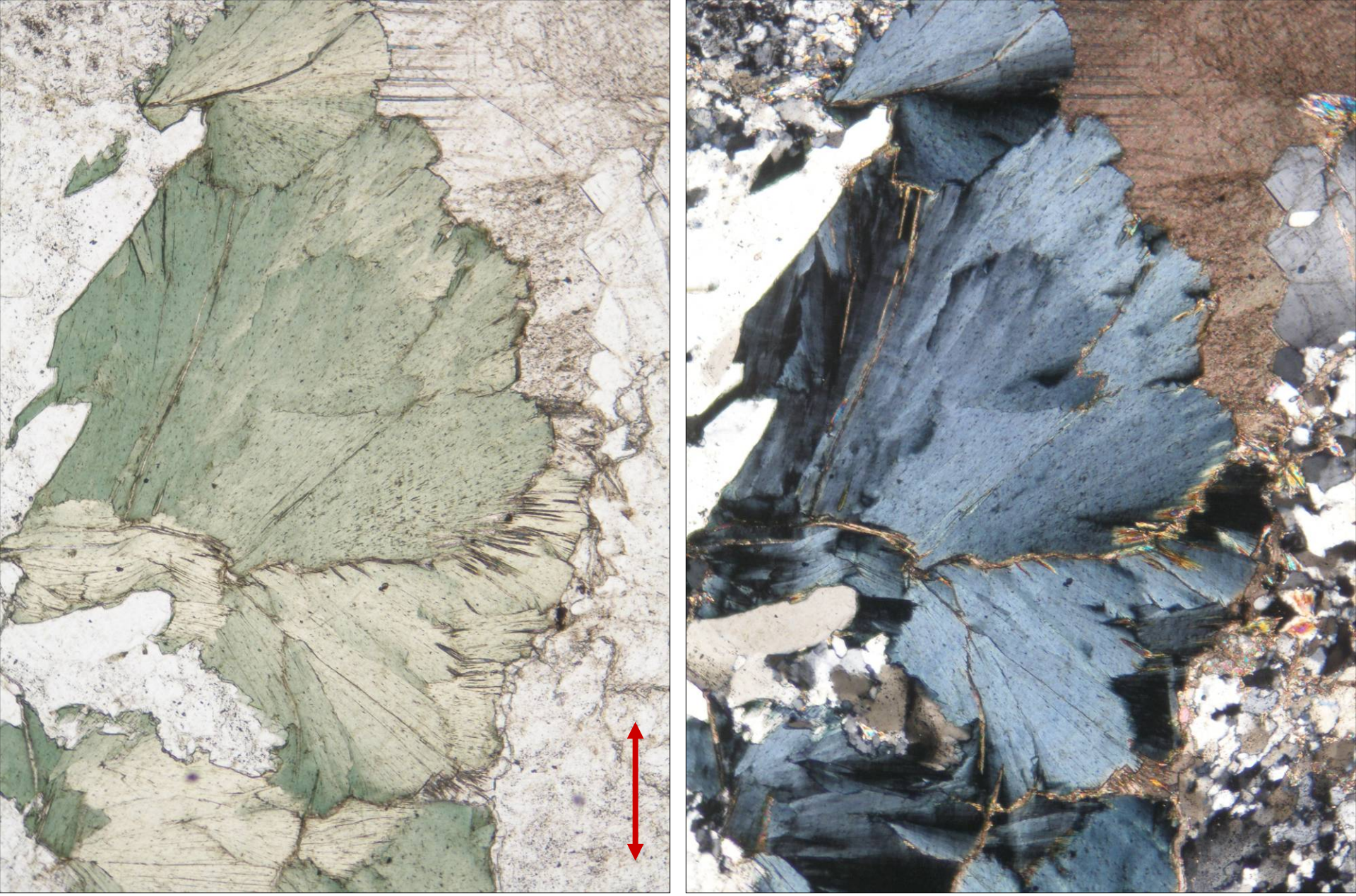
Chlorite in pegmatite from Mirošov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.6 mm. Photo: JiZi.



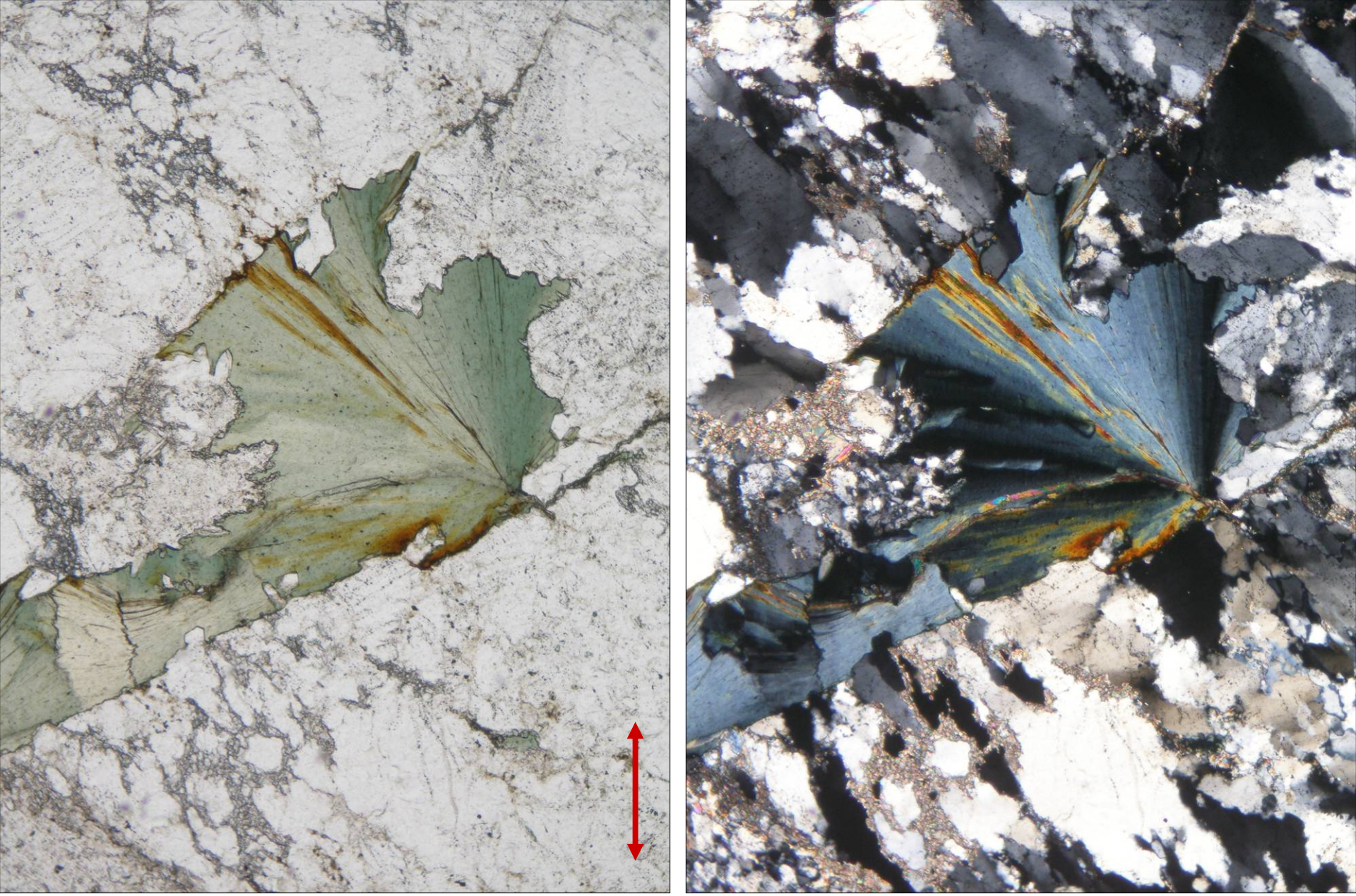
Pleochroism of fan-shaped chlorite in the Alpine-type vein in gneiss from Bohutín, the Czech Republic; PPL. Width of fields of view is ca. 2.0 mm. Photo: JiZi.



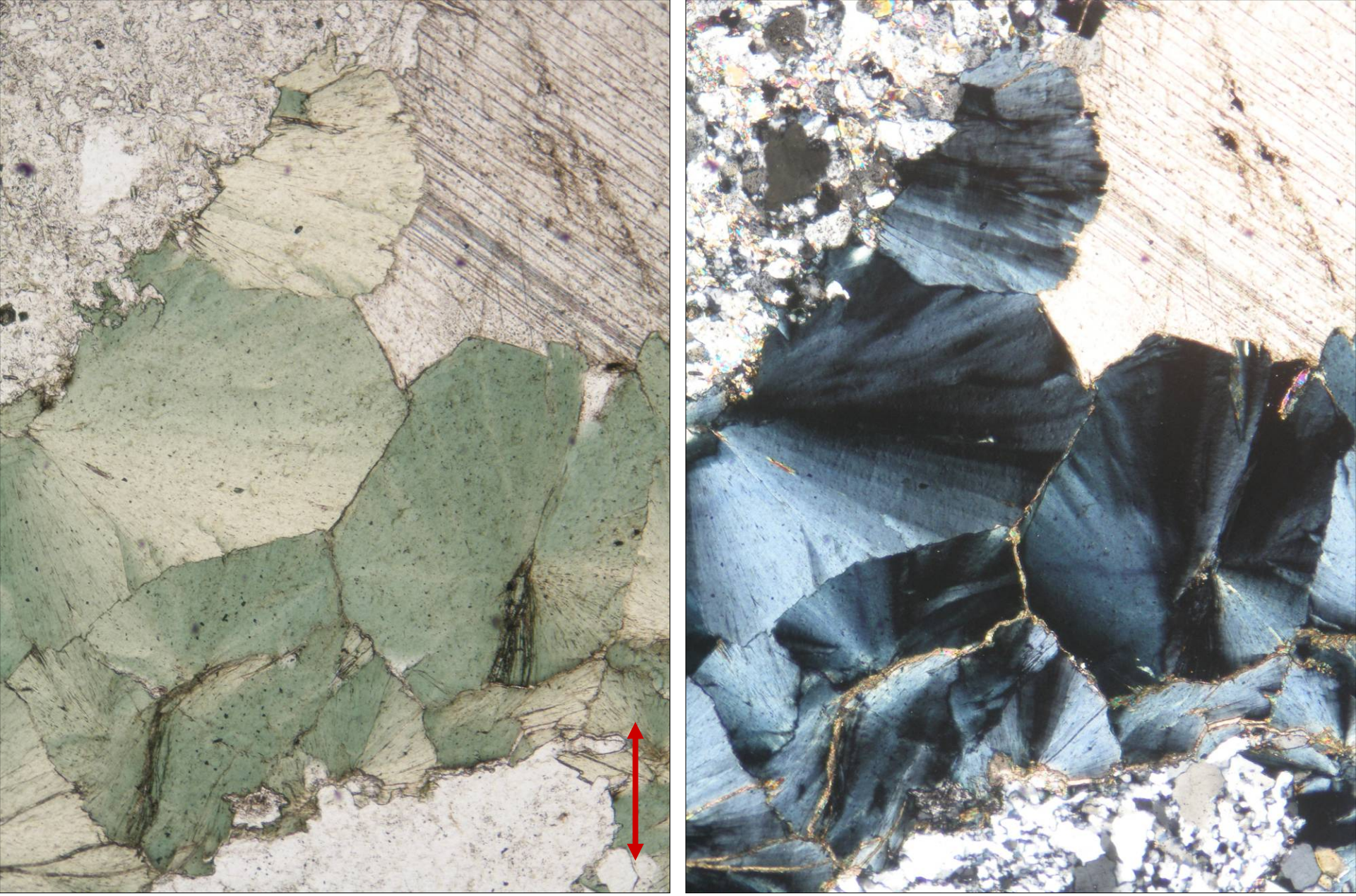
Fan-shaped chlorite in the Alpine-type vein in gneiss from Bohutín, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.0 mm. Photo: JiZi.



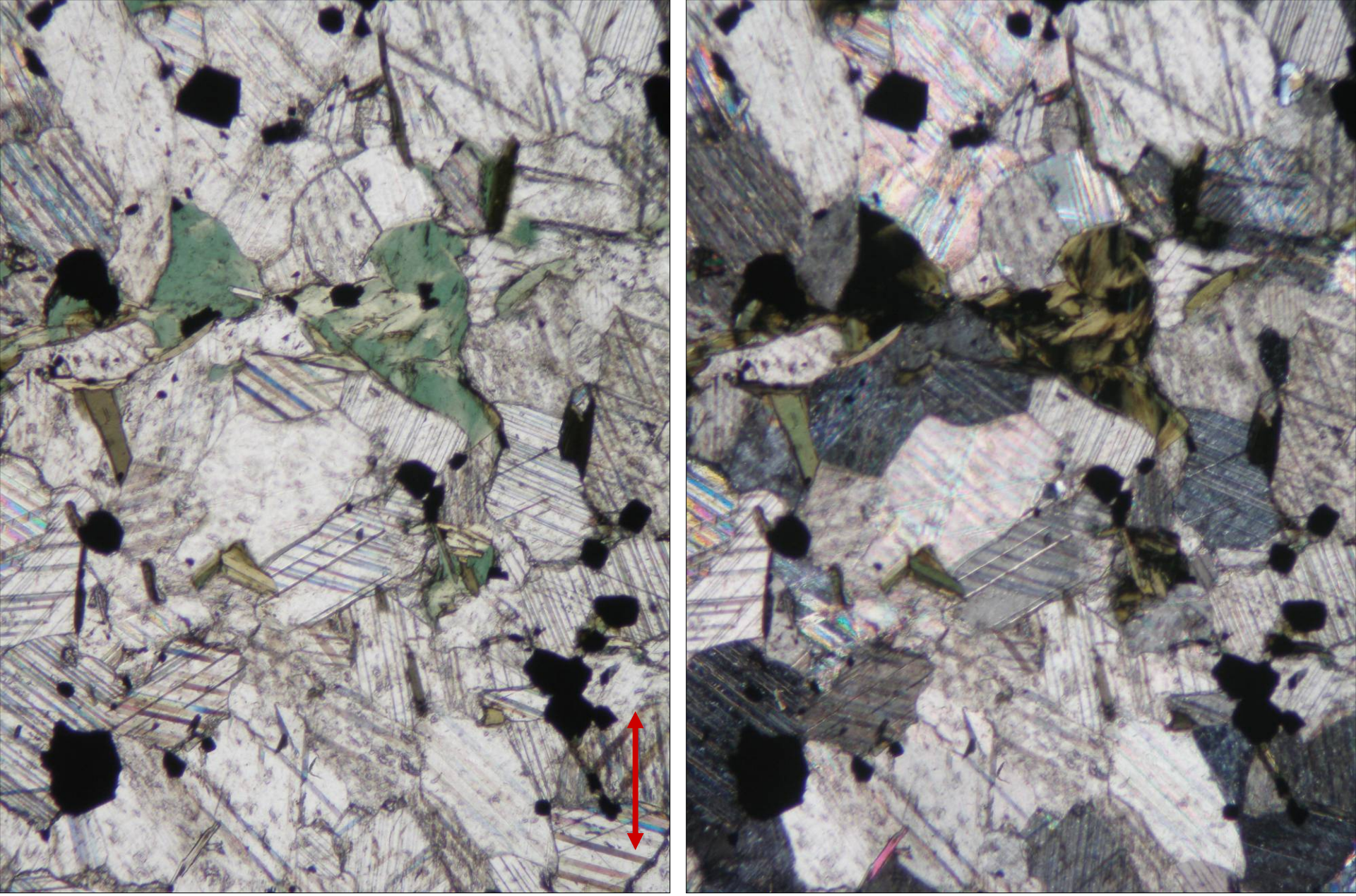
Chlorite in the Alpine-type vein in gneiss from Bohutín, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.0 mm. Photo: JiZi.



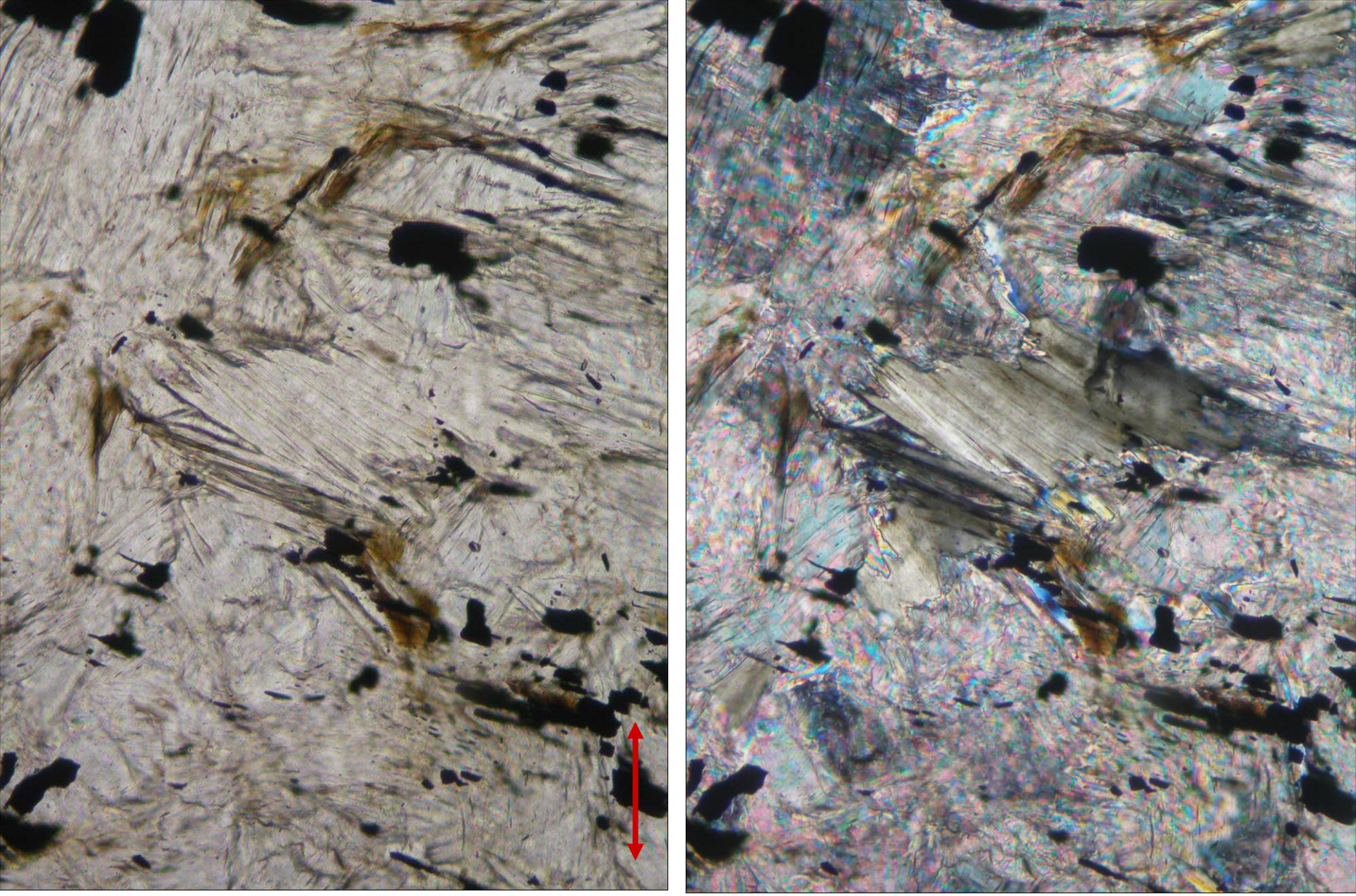
Chlorite (partly altered to limonite) in the Alpine-type vein in gneiss from Bohutín, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.



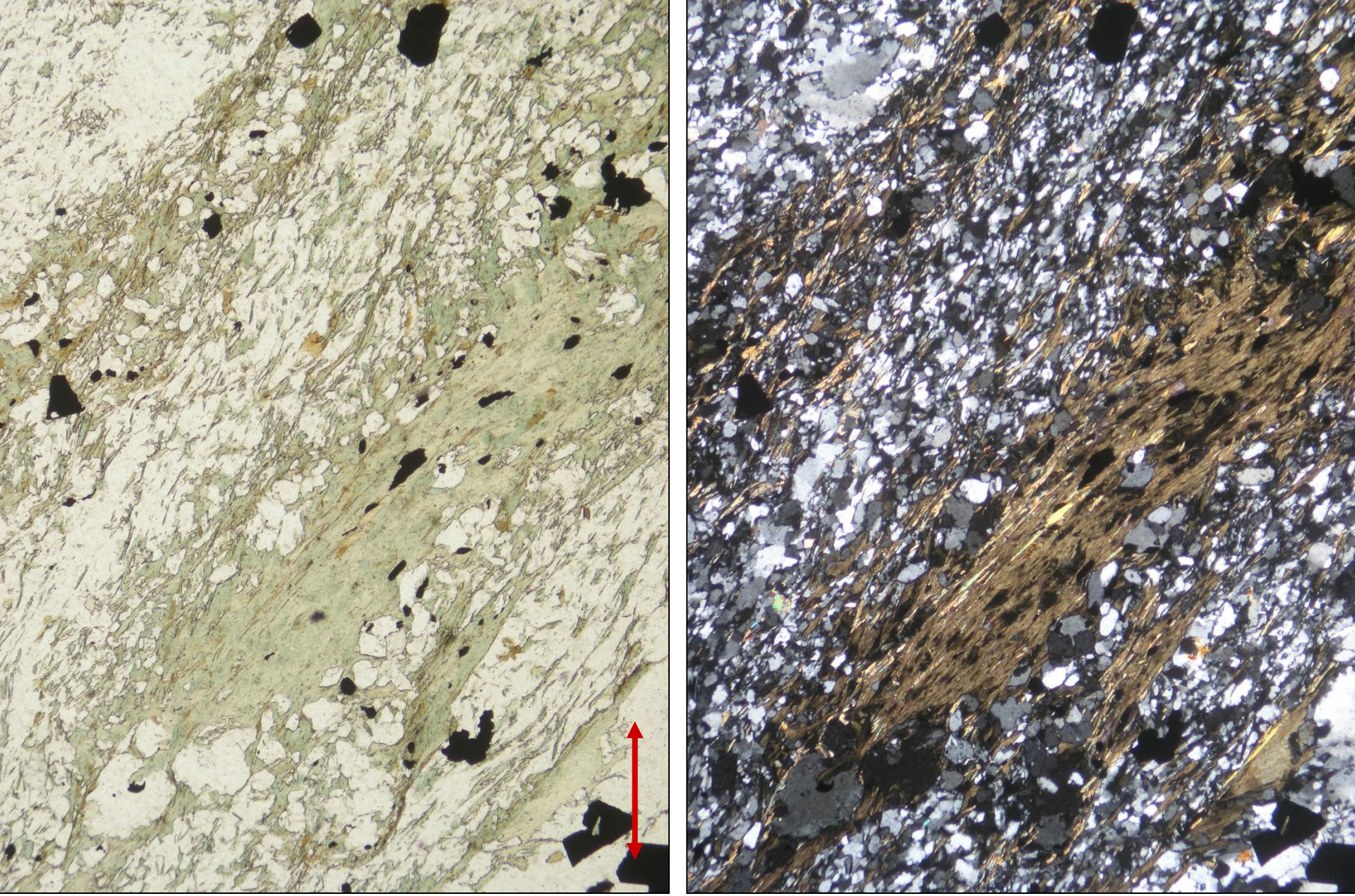
Chlorite and calcite in the Alpine-type vein in gneiss from Bohutín, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.



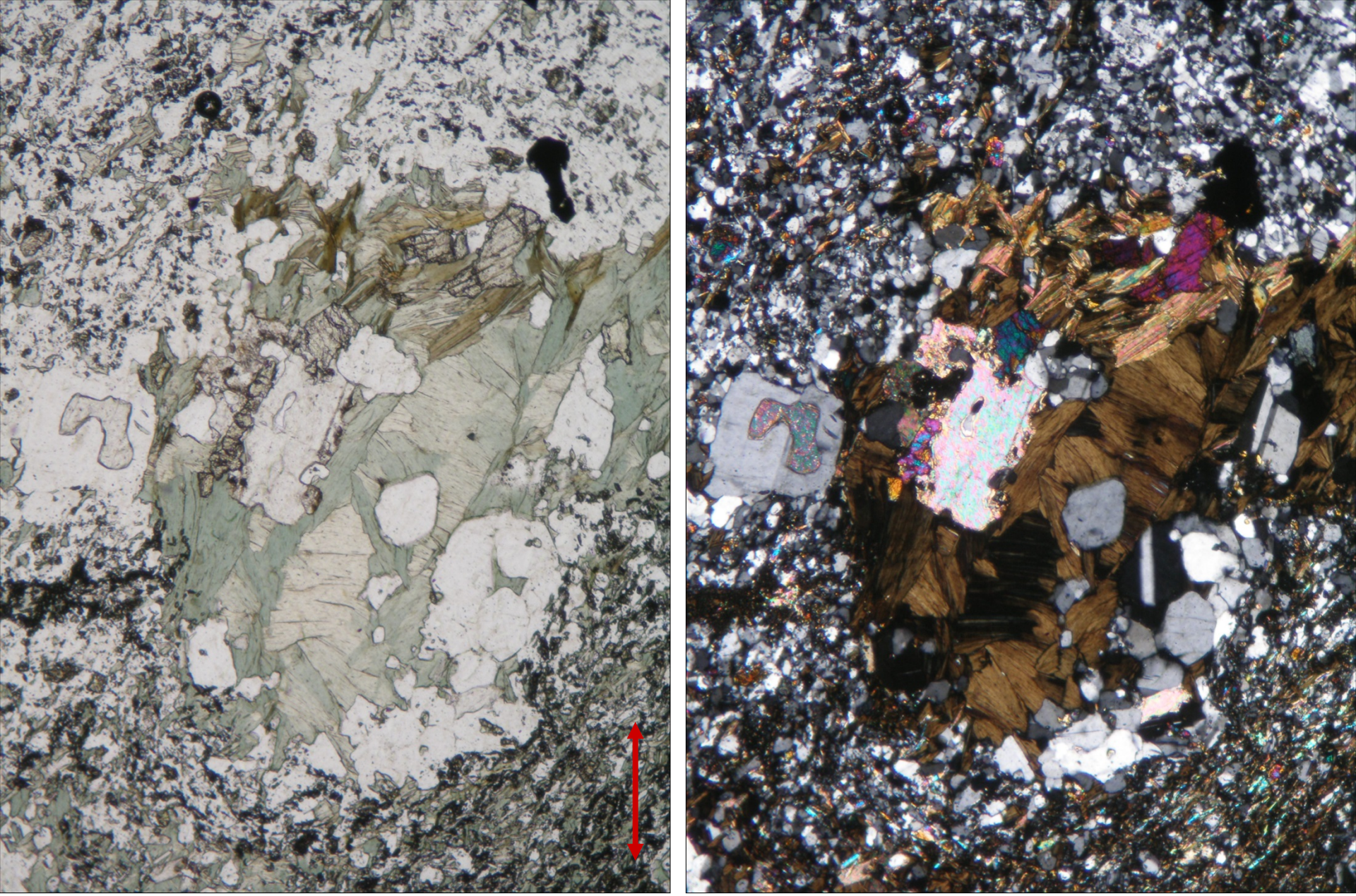
Chlorite with calcite, biotite and magnetite in marble from Heřmanovice, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.



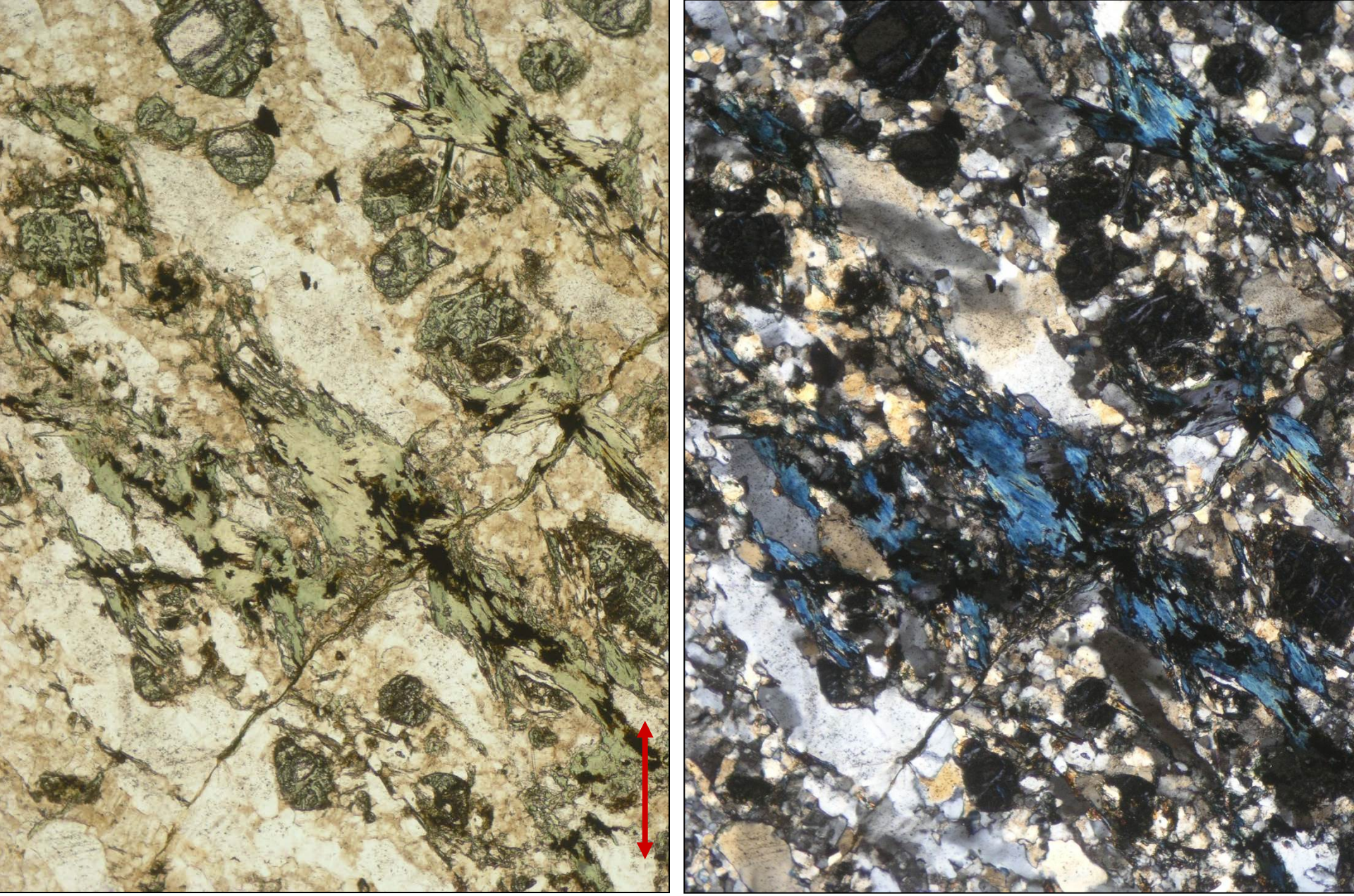
Chlorite, talc and magnetite in soapstone from Vernířovice, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.8 mm. Photo: JiZi.



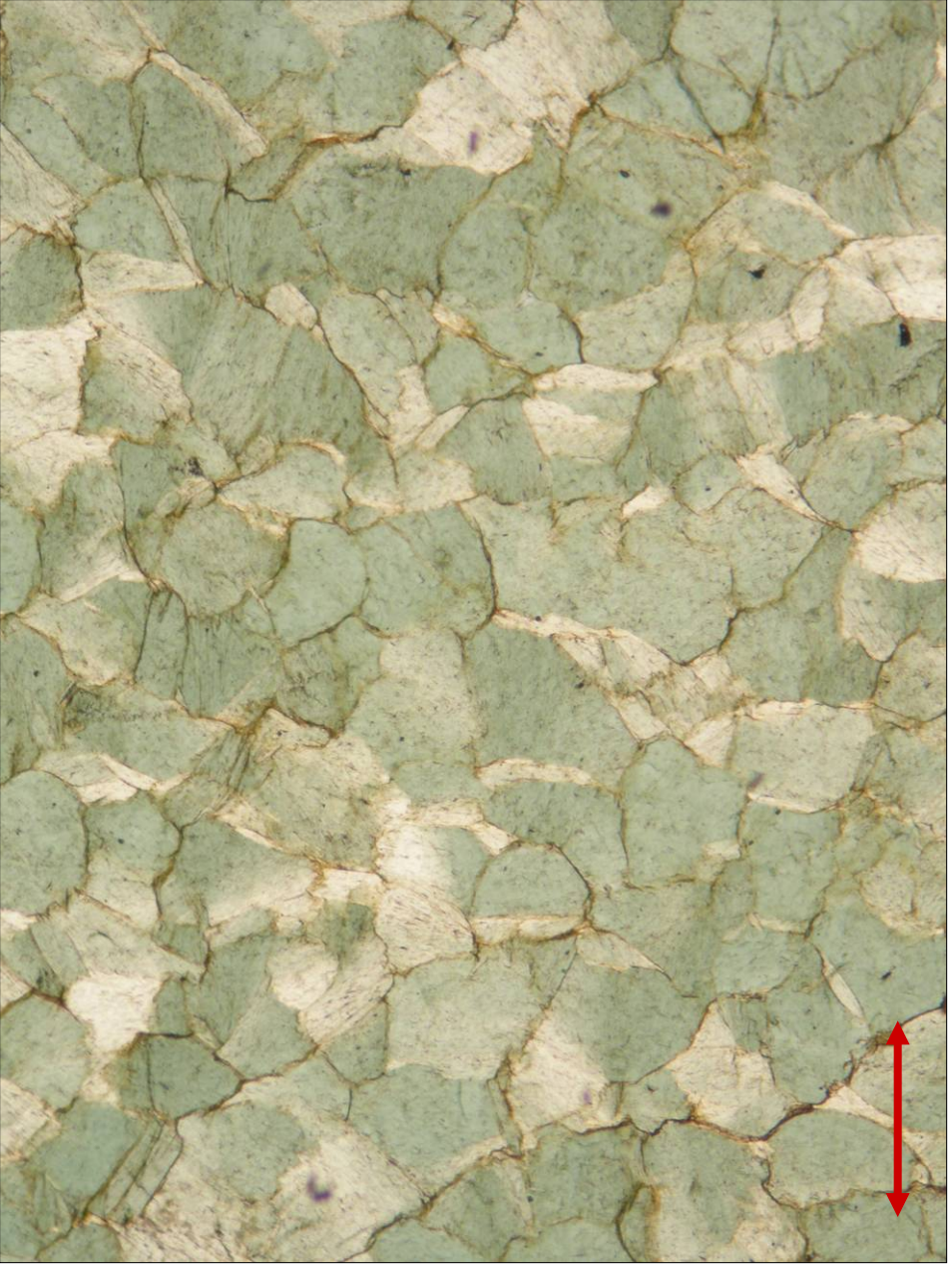
Chlorite in quartzite from Zlaté Hory, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.4 mm. Photo: JiZi.

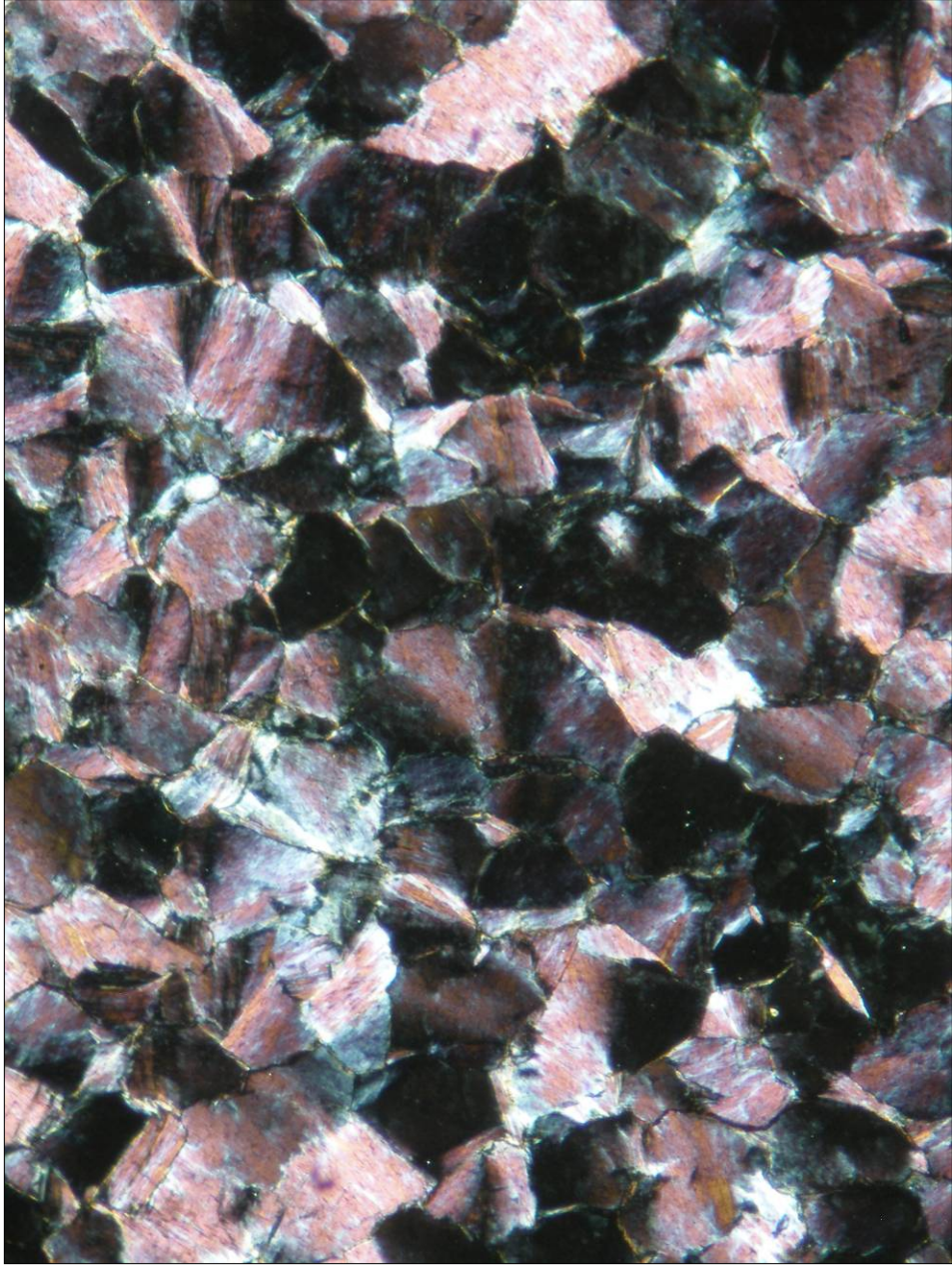


Chlorite in greenschist from Drakov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.

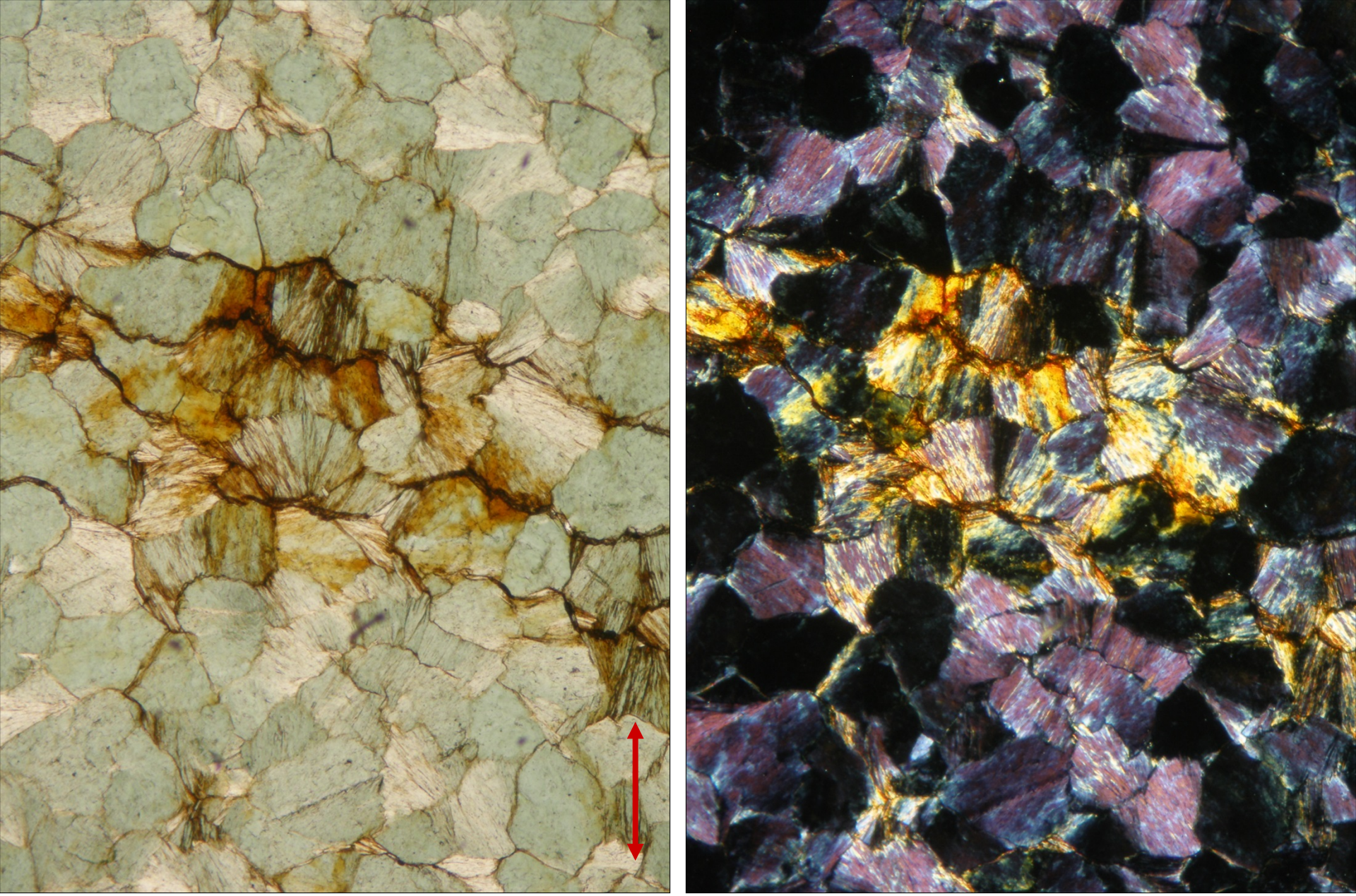


Chlorite and strongly chloritized garnet in gneiss from Rovečné, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.4 mm. Photo: JiZi.

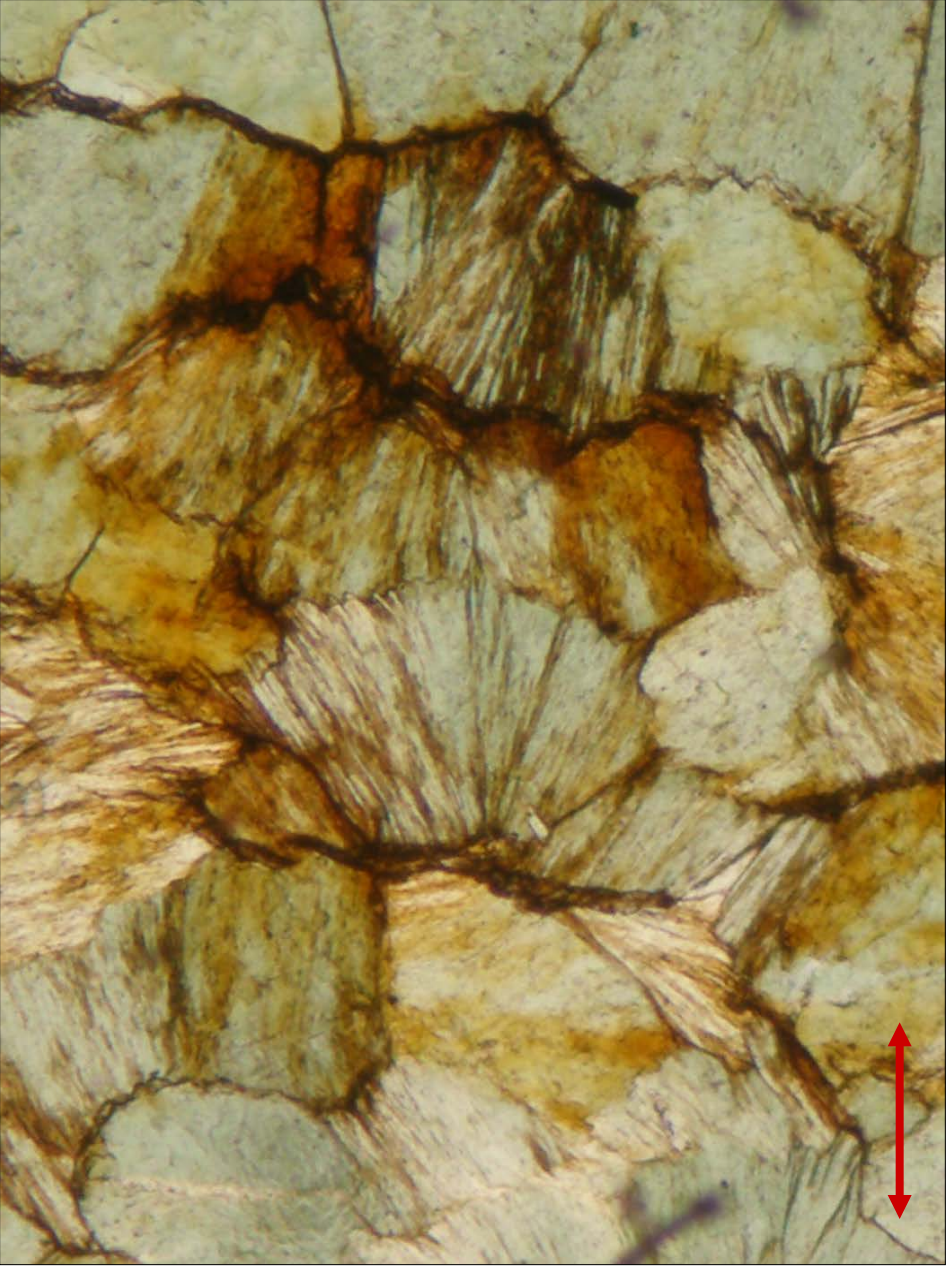


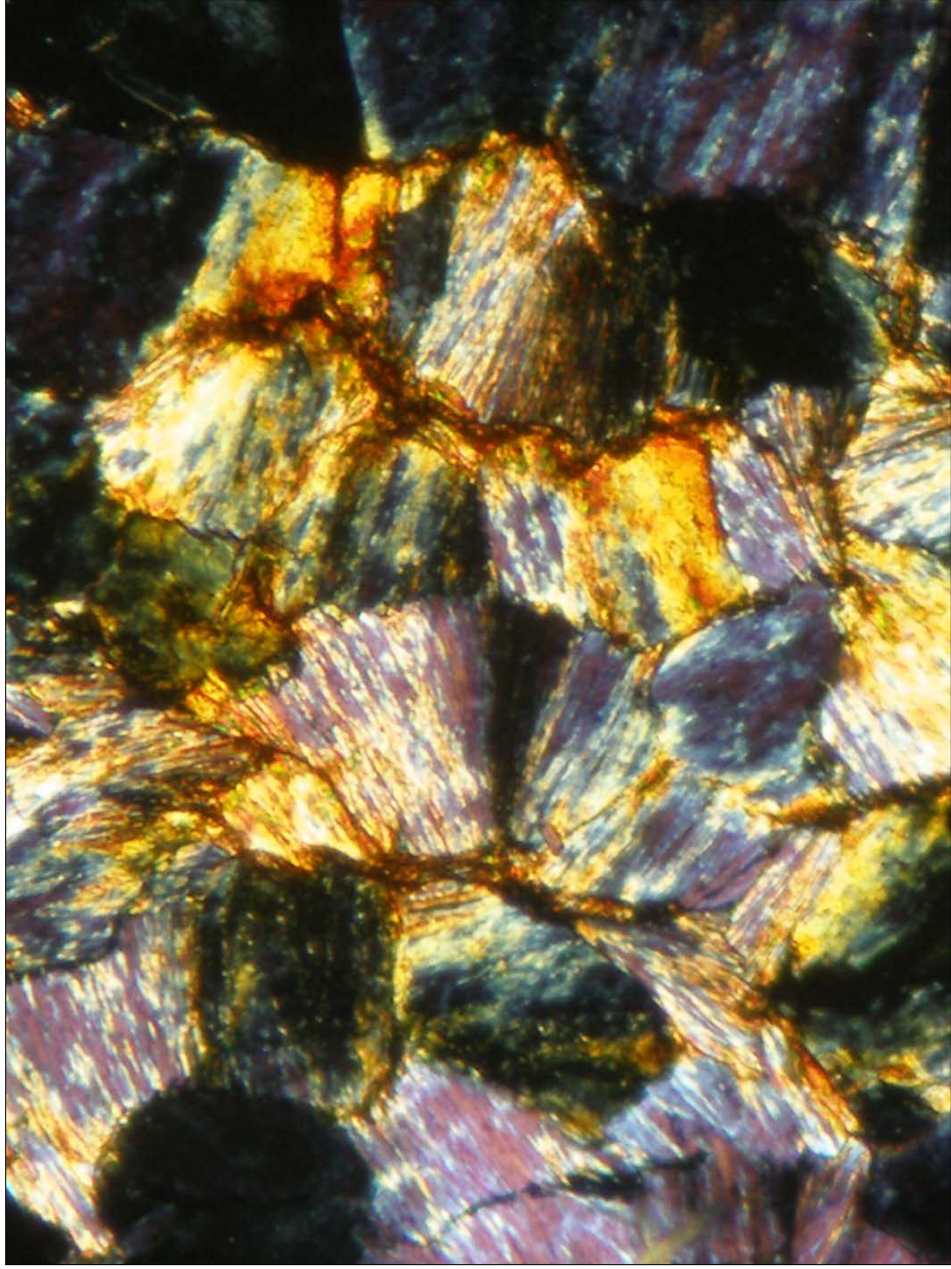


Chlorite in iron ore from Drakov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.

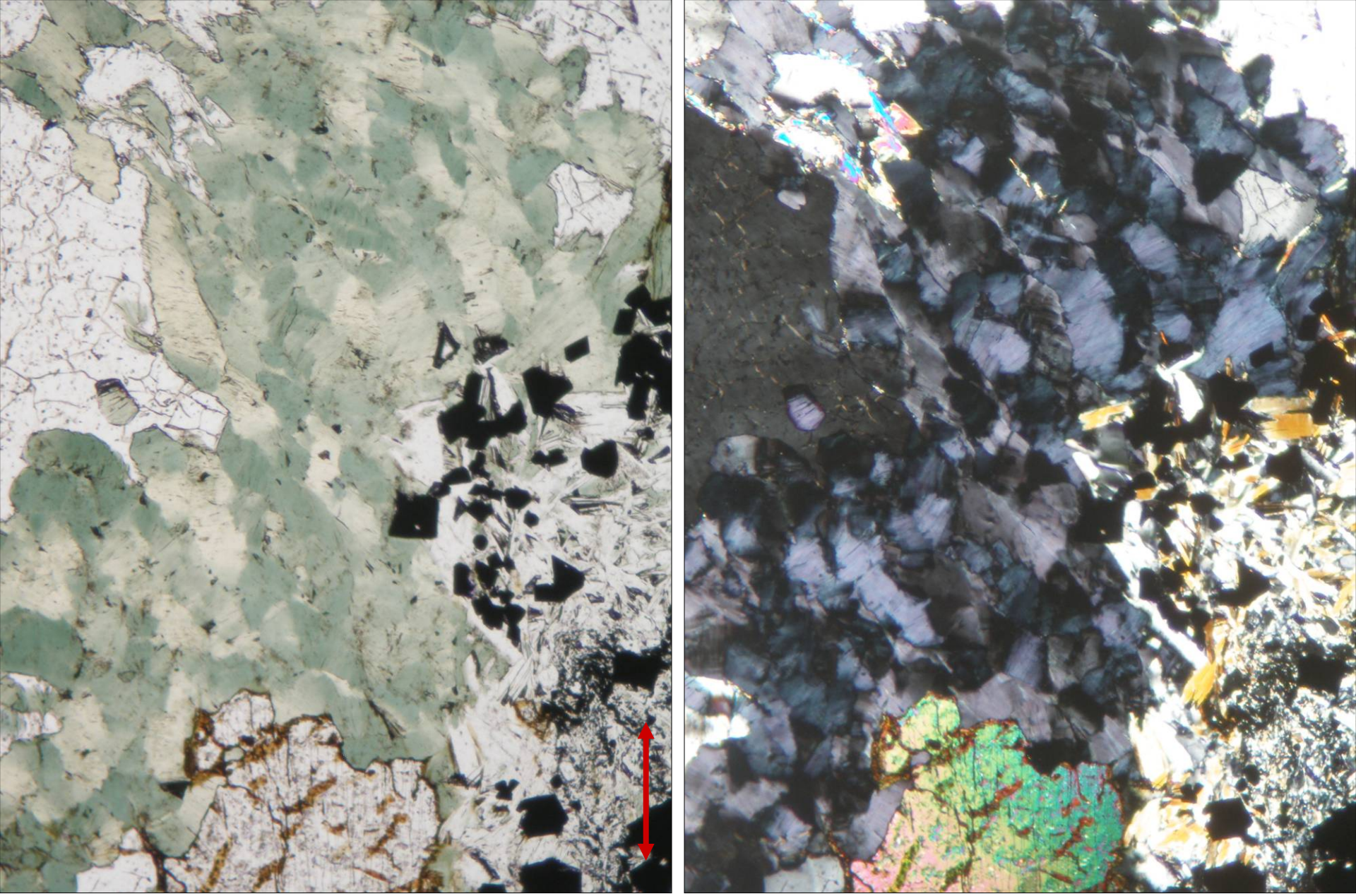


Chlorite with limonite stains in iron ore from Drakov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.

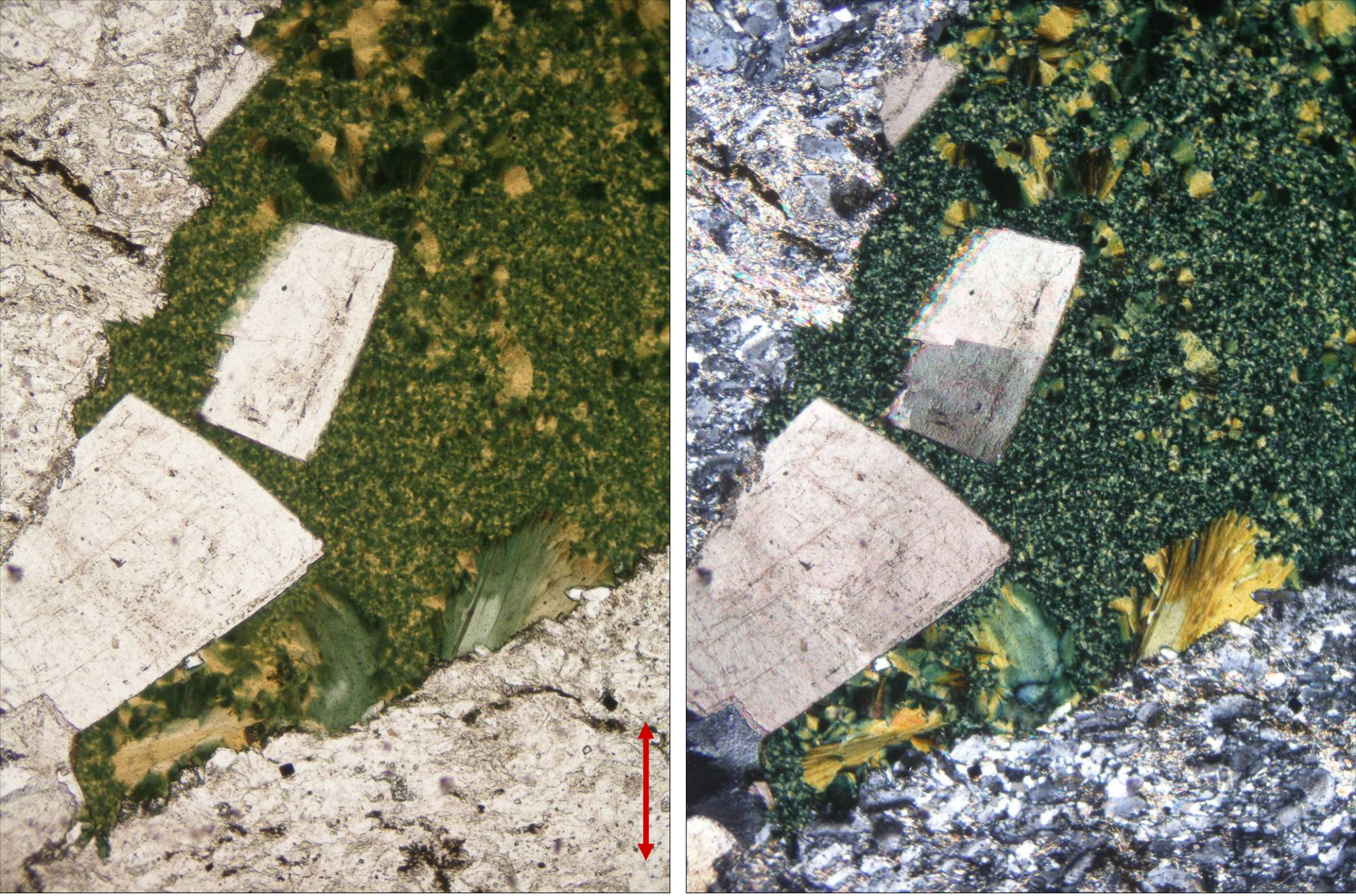




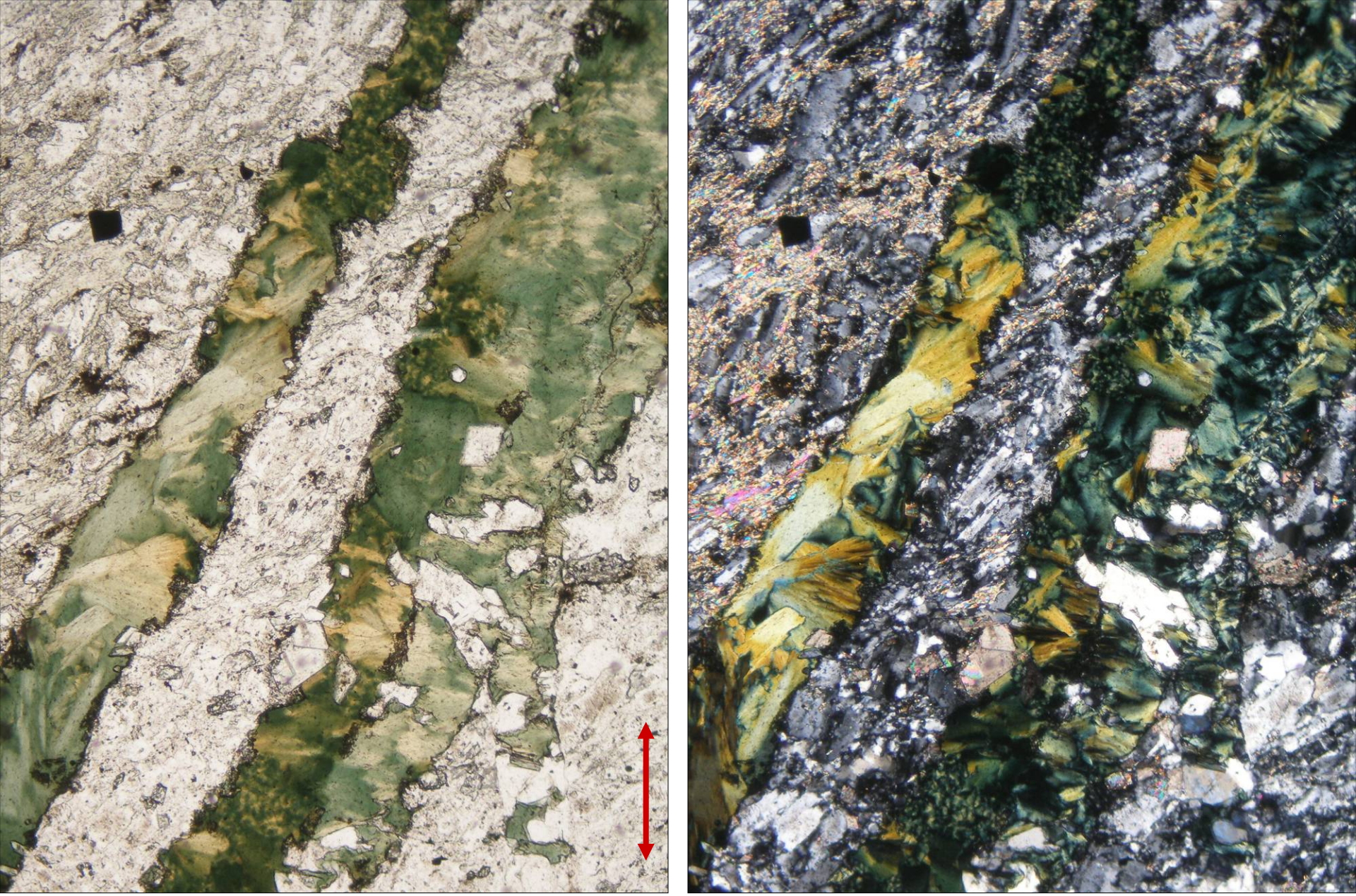
Chlorite with limonite stains in iron ore from Drakov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.7 mm. Photo: JiZi.



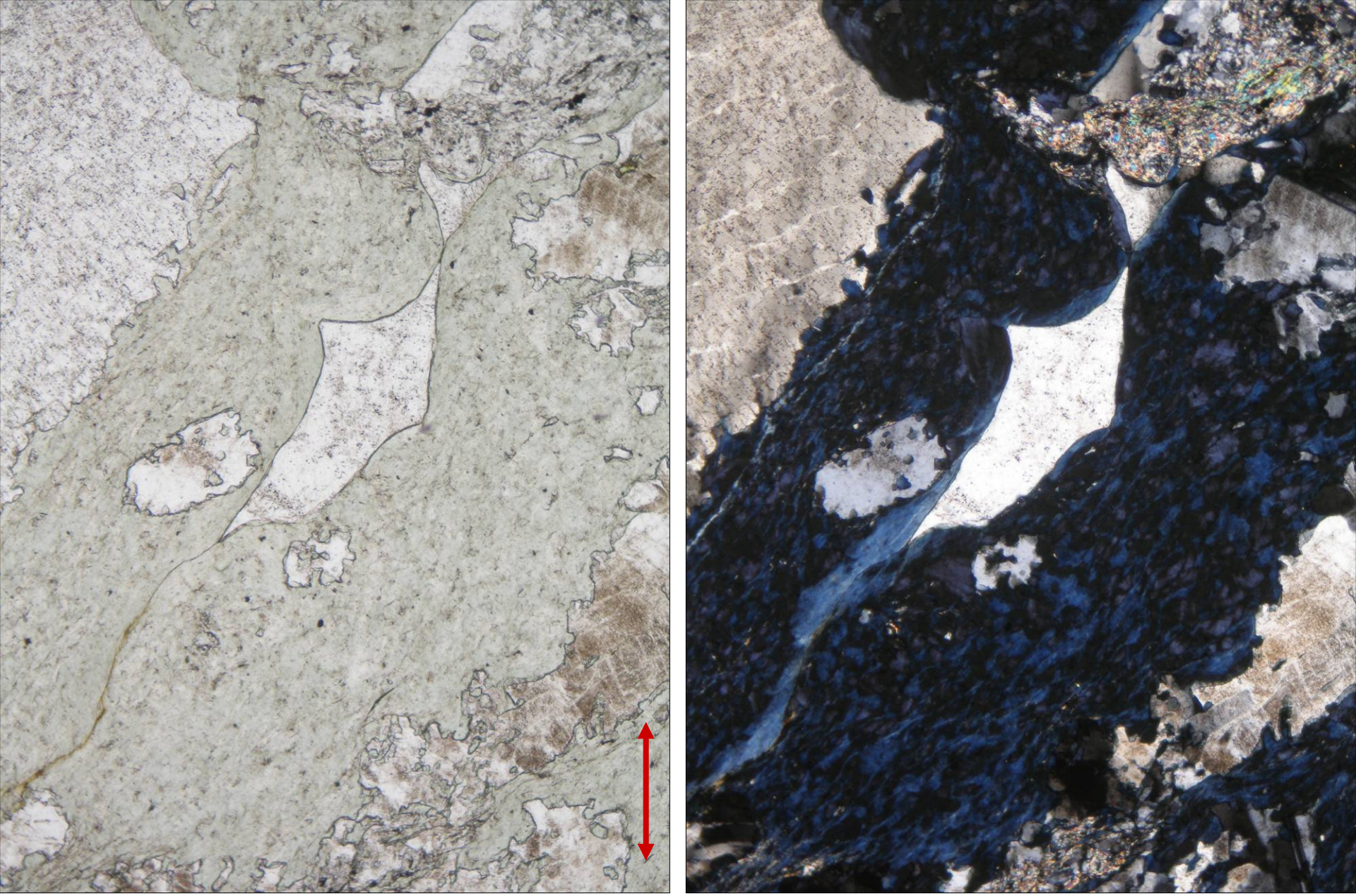
Chlorite in a hydrothermal quartz-carbonate vein from Horní Město, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.4 mm. Photo: JiZi.



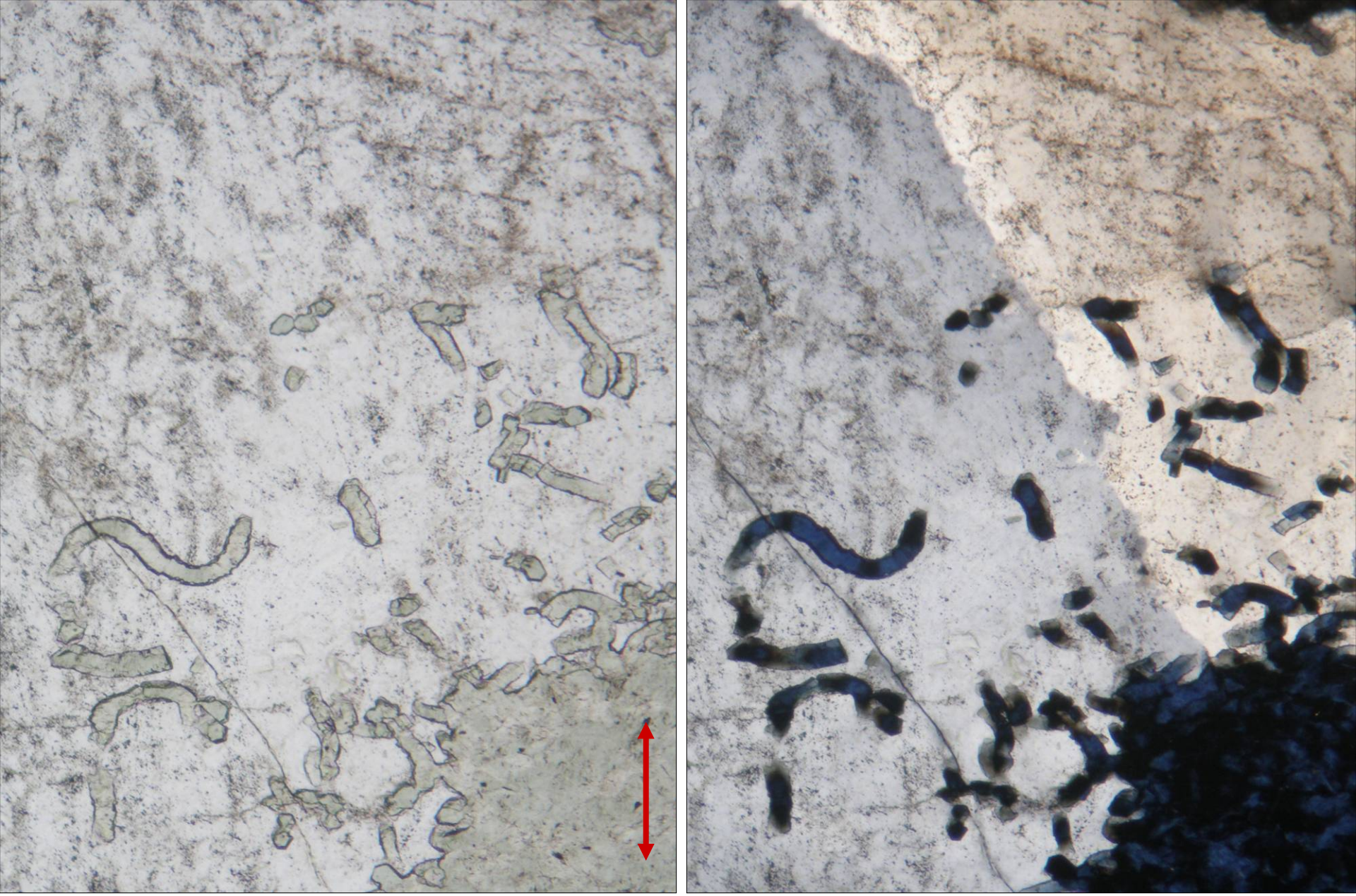
Chlorite and carbonate in a hydrothermal veinlet of the Alpine-type in palaeotrachyte from Oskava, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.



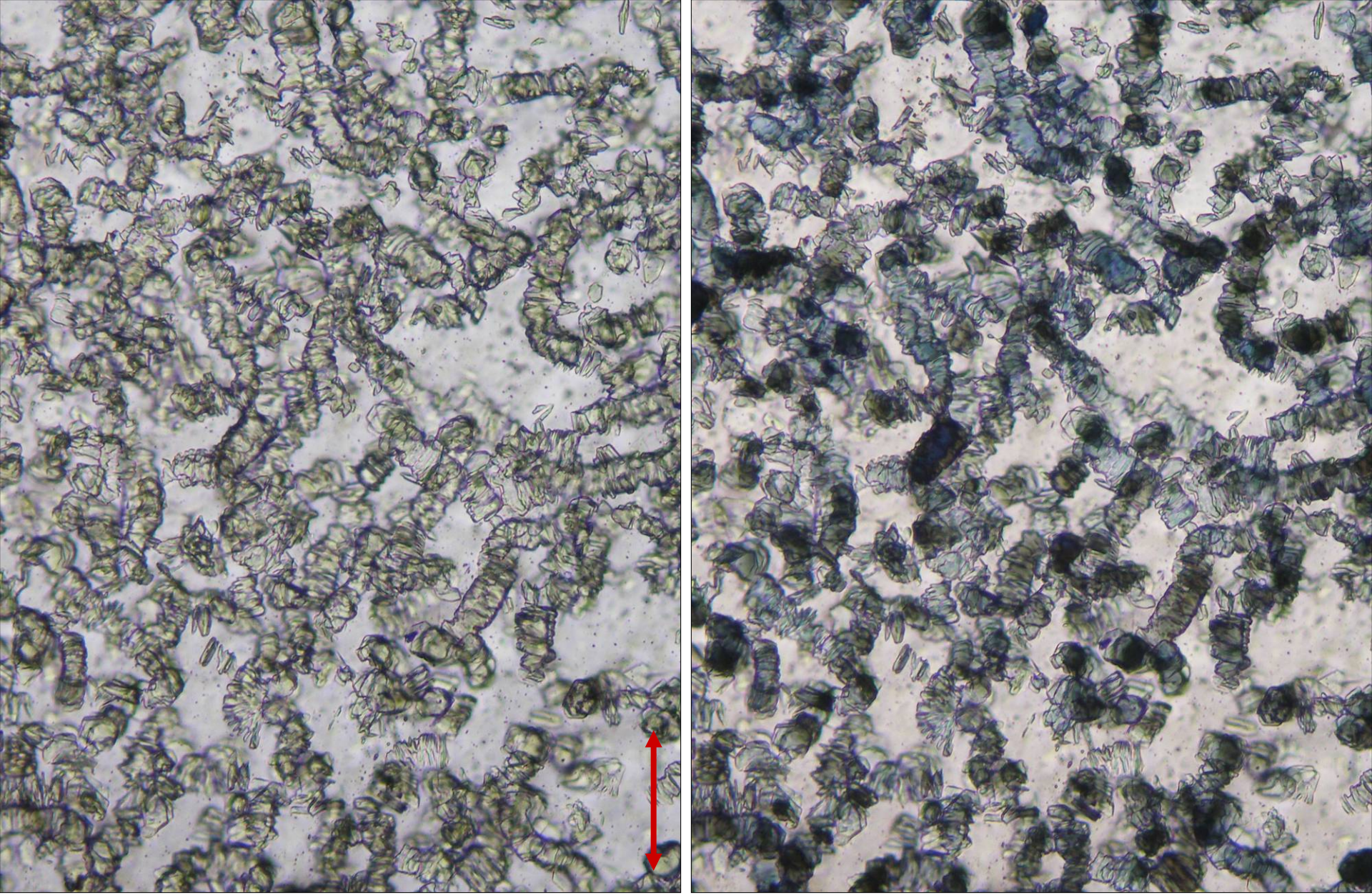
Chlorite hydrothermal veinlets of the Alpine-type in palaeotrachyte from Oskava, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.5 mm. Photo: JiZi.



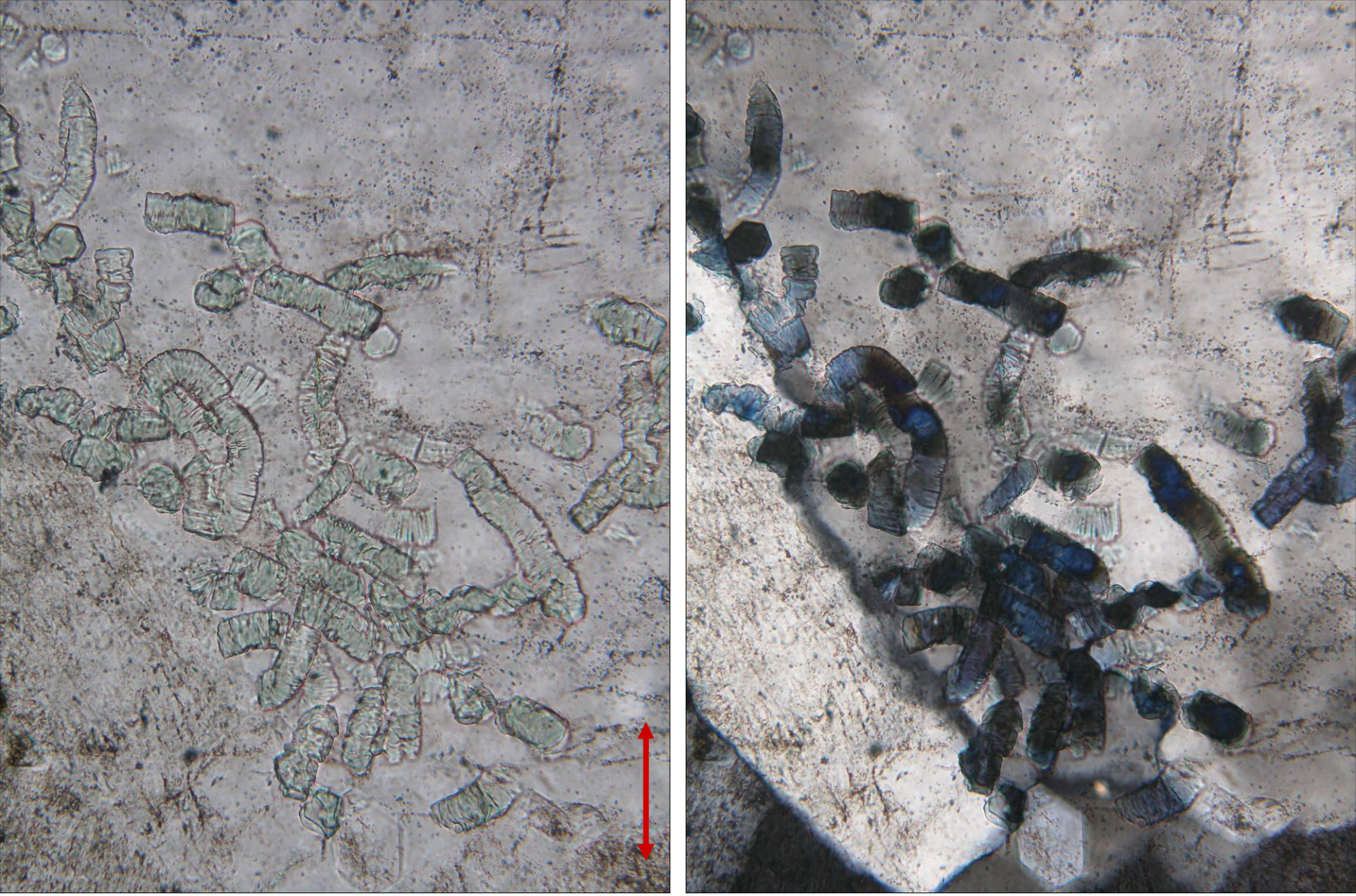
Fine-grained chlorite in a hydrothermal quartz-albite vein from Břidličná, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.0 mm. Photo: JiZi.



Quartz with worm-like chlorite inclusions in a quartz-albite vein from Břidličná, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.5 mm. Photo: JiZi.



Worm-like chlorite inclusions in quartz of a quartz-calcite hydrothermal vein from Svobodné Heřmanice, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.3 mm. Photo: JiZi.



Worm-like chlorite inclusions in quartz of a quartz-albite-calcite hydrothermal vein from Hrubá Voda, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.4 mm. Photo: JiZi.