

# GARNET GROUP

*Chemical formula:*  $R^{2+}_3R^{3+}_2[SiO_4]_3$  , where  $R^{2+} = Mg, Fe, Mn, Ca...$ ,  $R^{3+} = Al, Fe, Cr...$

*Crystal system:* cubic

*Color in thin section:* colorless, pale pink, pale reddish brown

*Form:* dodecahedral or trapezohedral crystals, granular or irregular masses

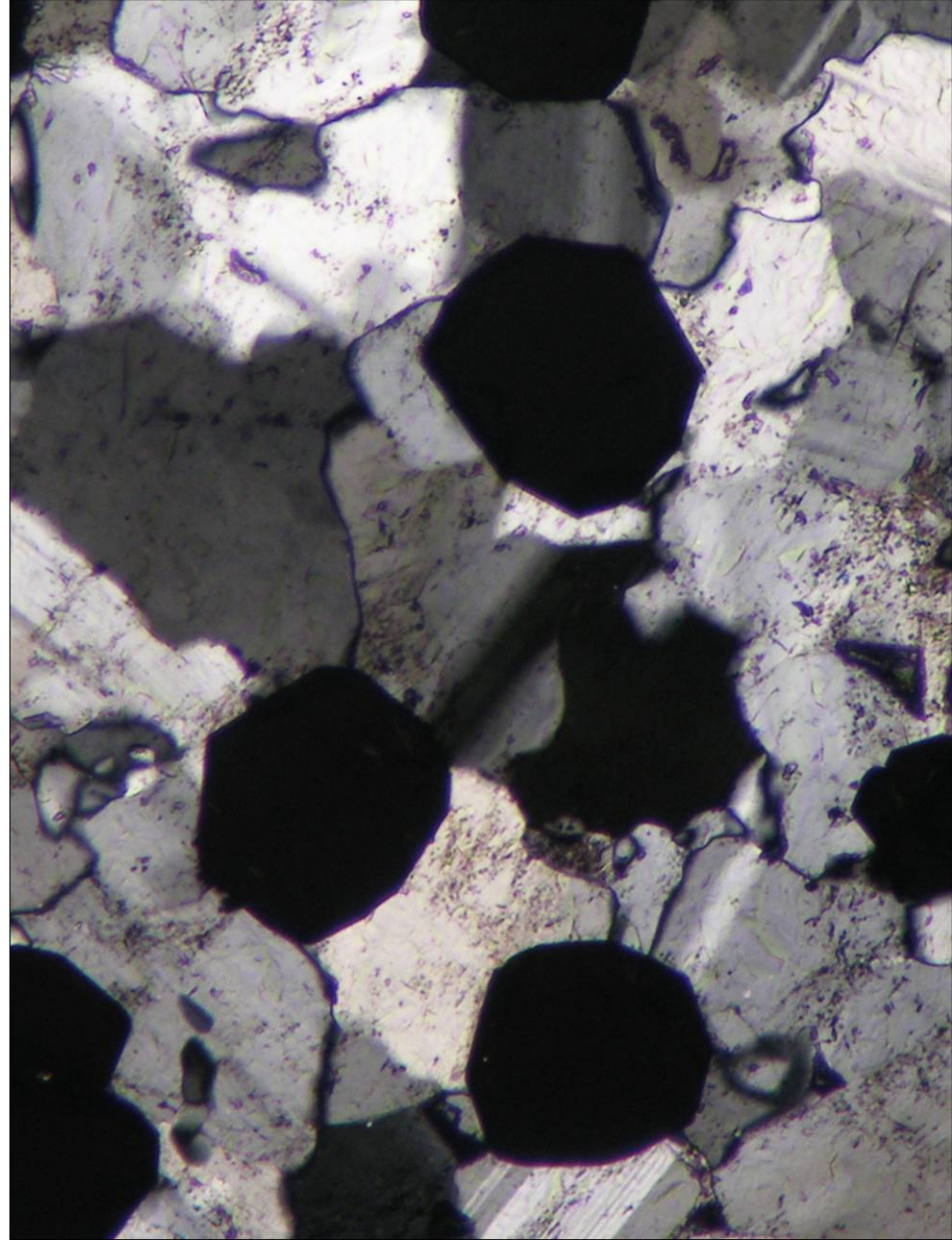
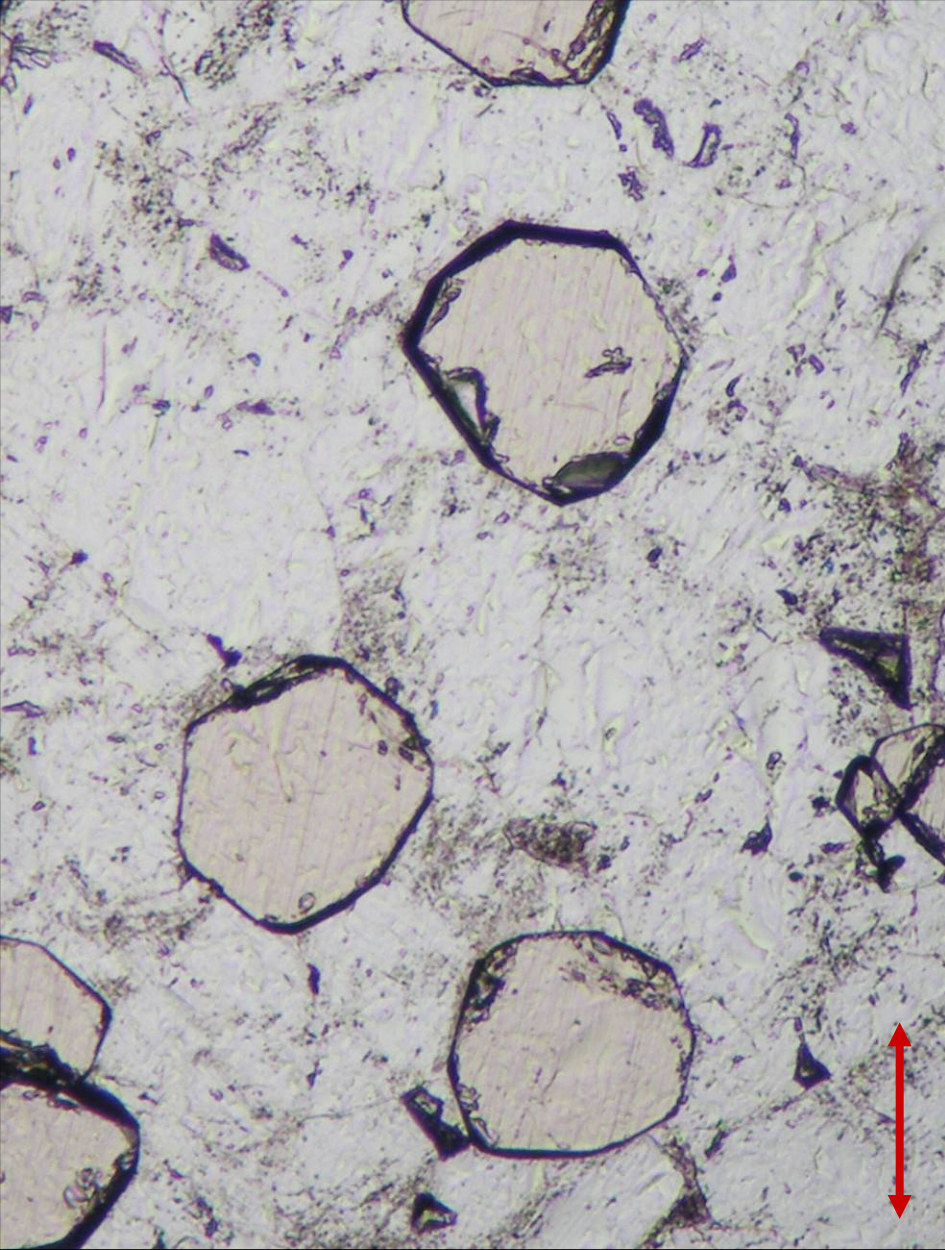
*Cleavage:* none

<i>Indices of refraction:</i>	pyrope	$Mg_3Al_2[SiO_4]_3$	$n = 1.714$
	almandine	$Fe_3Al_2[SiO_4]_3$	$n = 1.830$
	spessartine	$Mn_3Al_2[SiO_4]_3$	$n = 1.800$
	grossular	$Ca_3Al_2[SiO_4]_3$	$n = 1.734$
	andradite	$Ca_3Fe_2[SiO_4]_3$	$n = 1.887$

*Alteration:* garnet may alter to chlorite, or occasionally to amphibole, epidote, or iron oxides

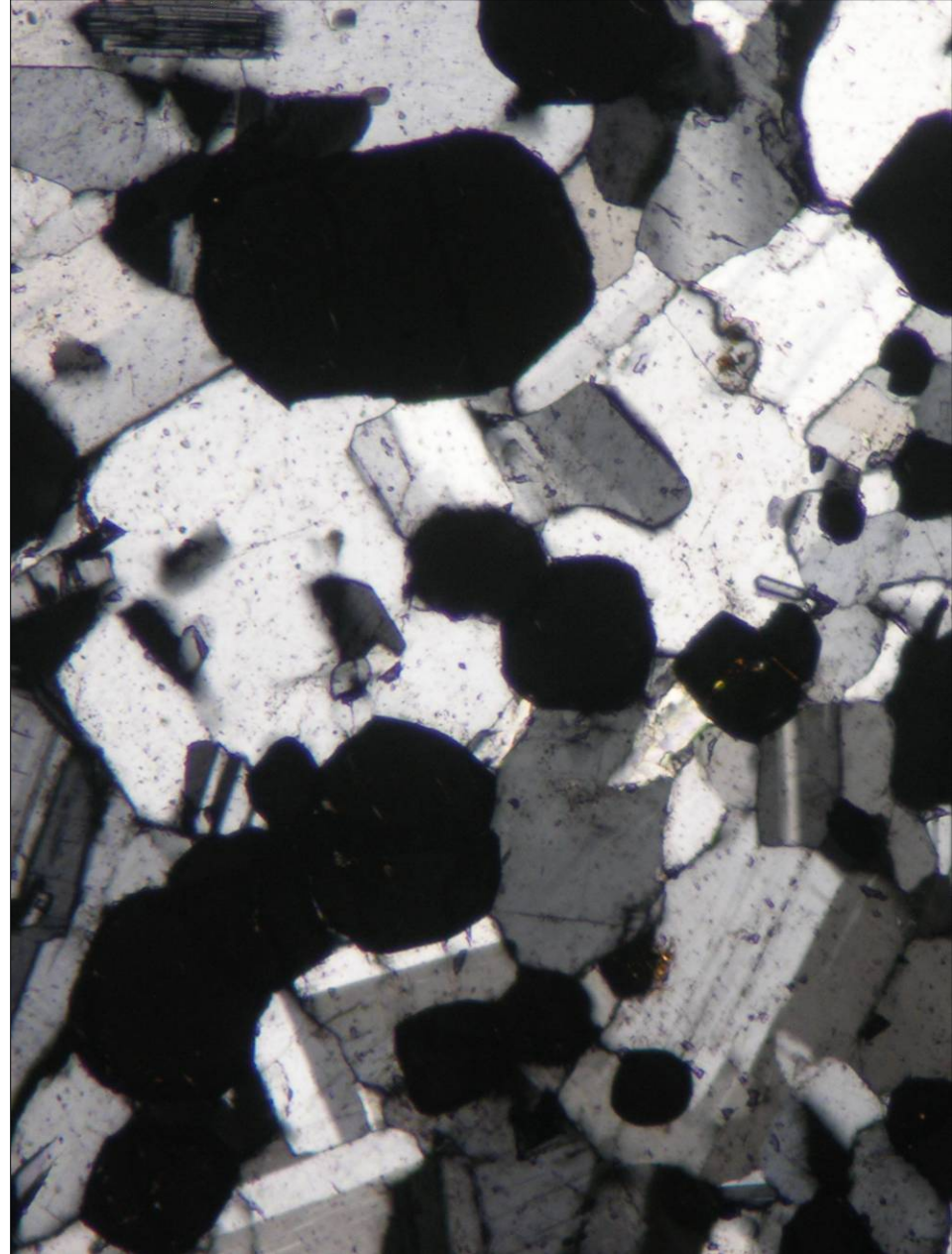
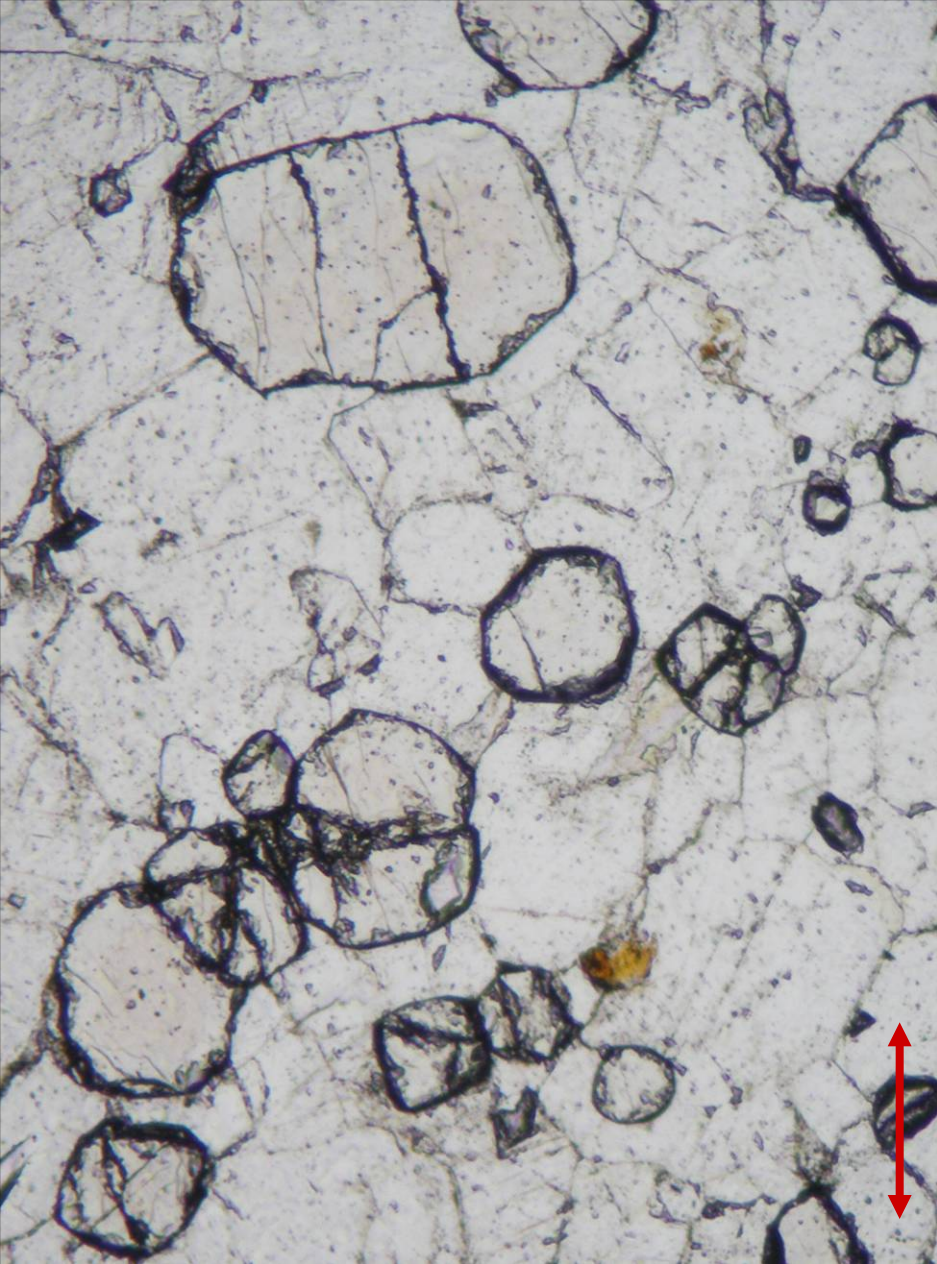
*Occurrence:* granite, pegmatite, aplite, rhyolite, peridotite, serpentinite, eclogite, mica schist, gneiss, amphibolite, granulite, marble, calc-silicate rocks (erlan), skarn

*Note:* often strong chemical zoning; grossular and andradite frequently show weak anomalous birefringence



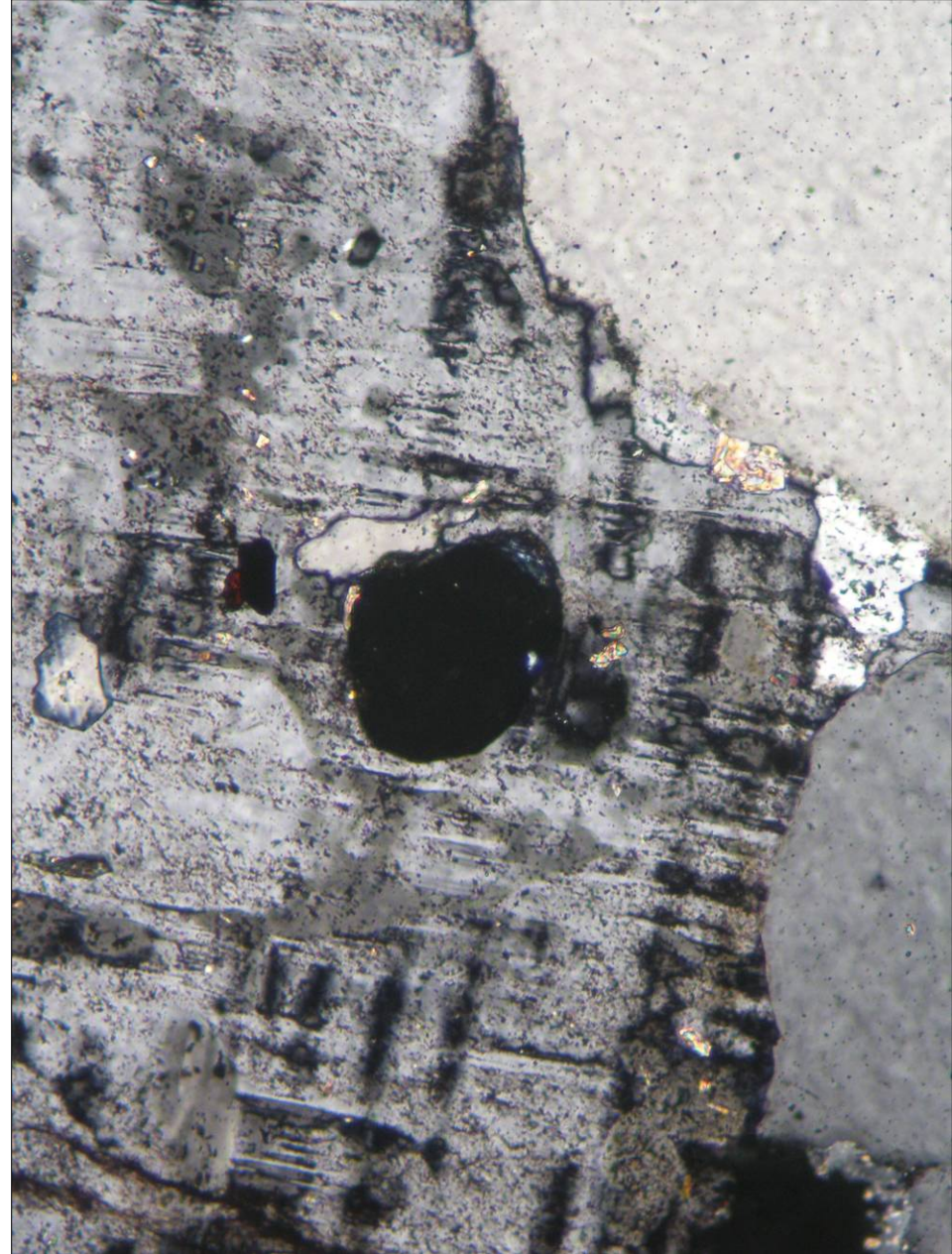
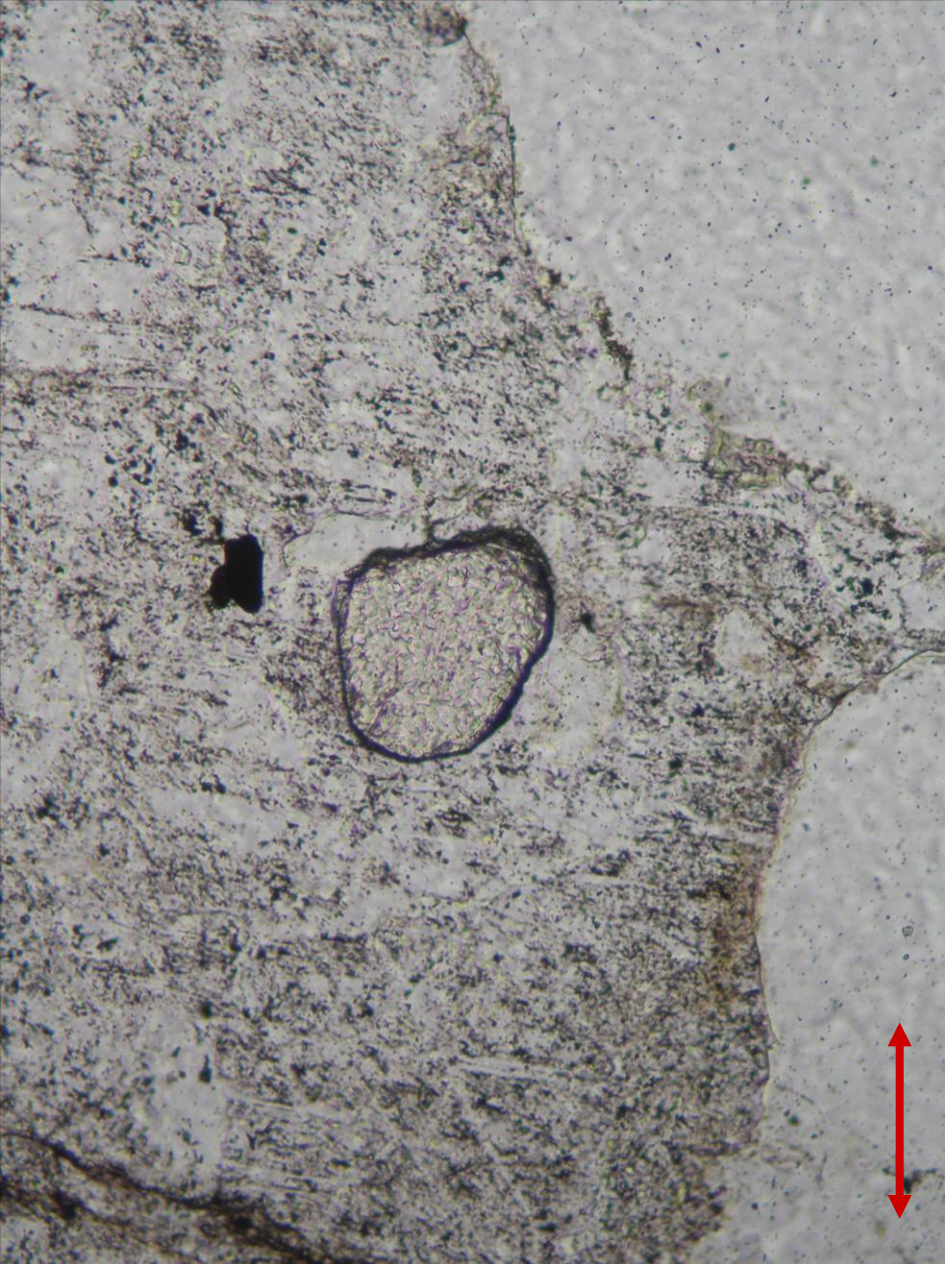
Garnet in pegmatite from Maršikov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.0 mm. Photo: JiZi.





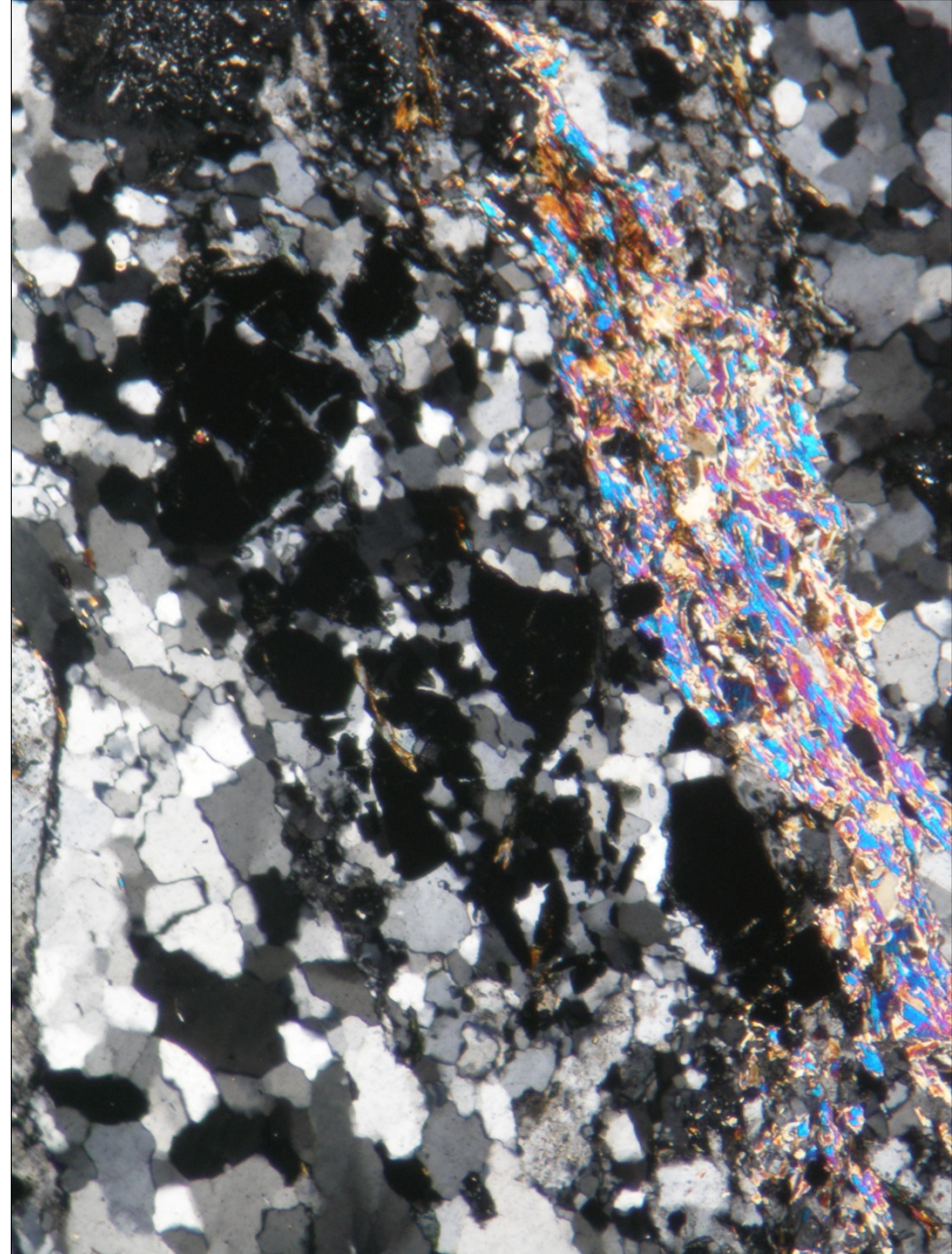
Garnet in pegmatite from Maršíkov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.8 mm. Photo: JiZi.





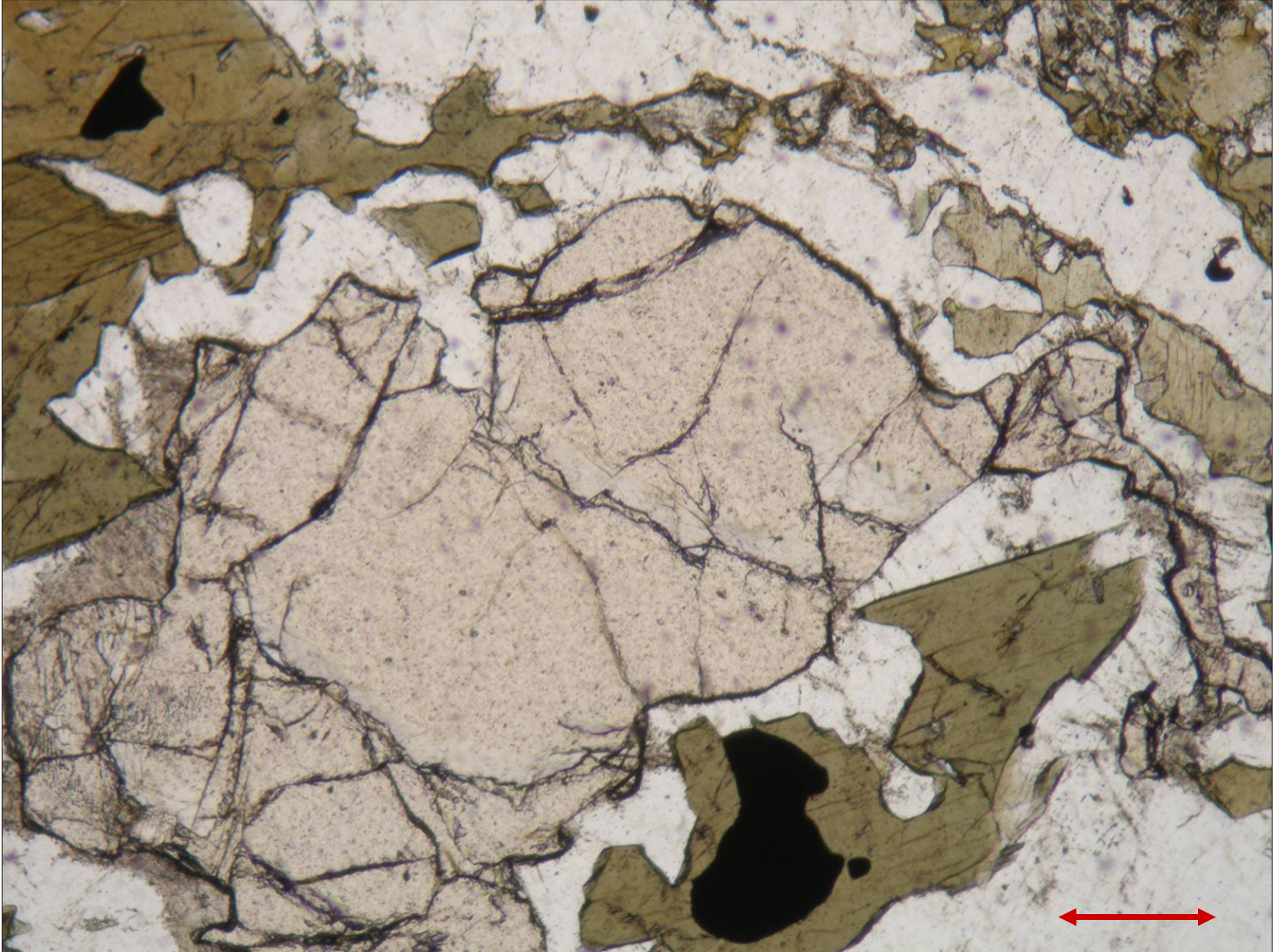
Garnet in aplopematite from Černá Voda, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.8 mm. Photo: JiZi.





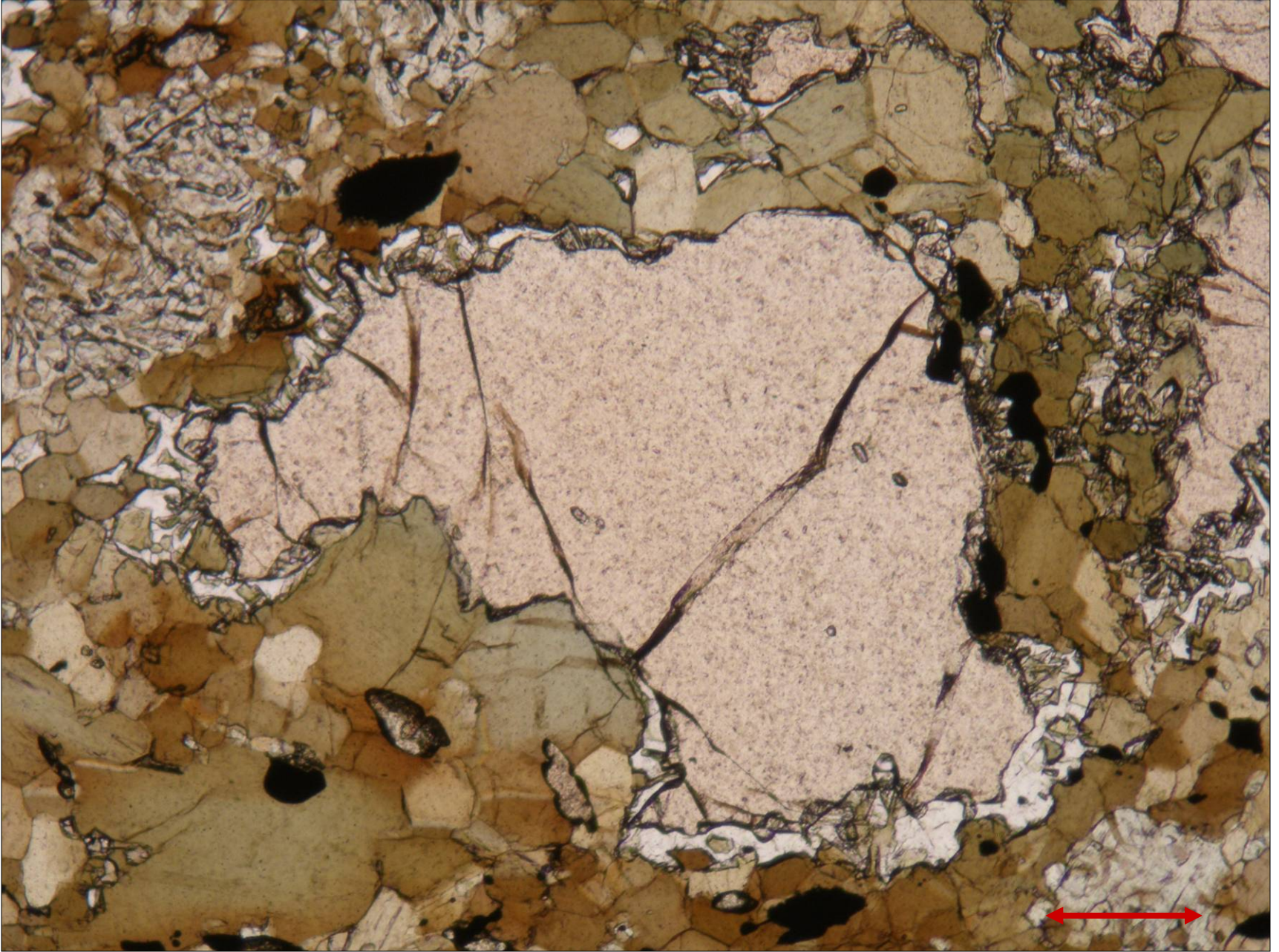
Garnet in orthogneiss from Nectava, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





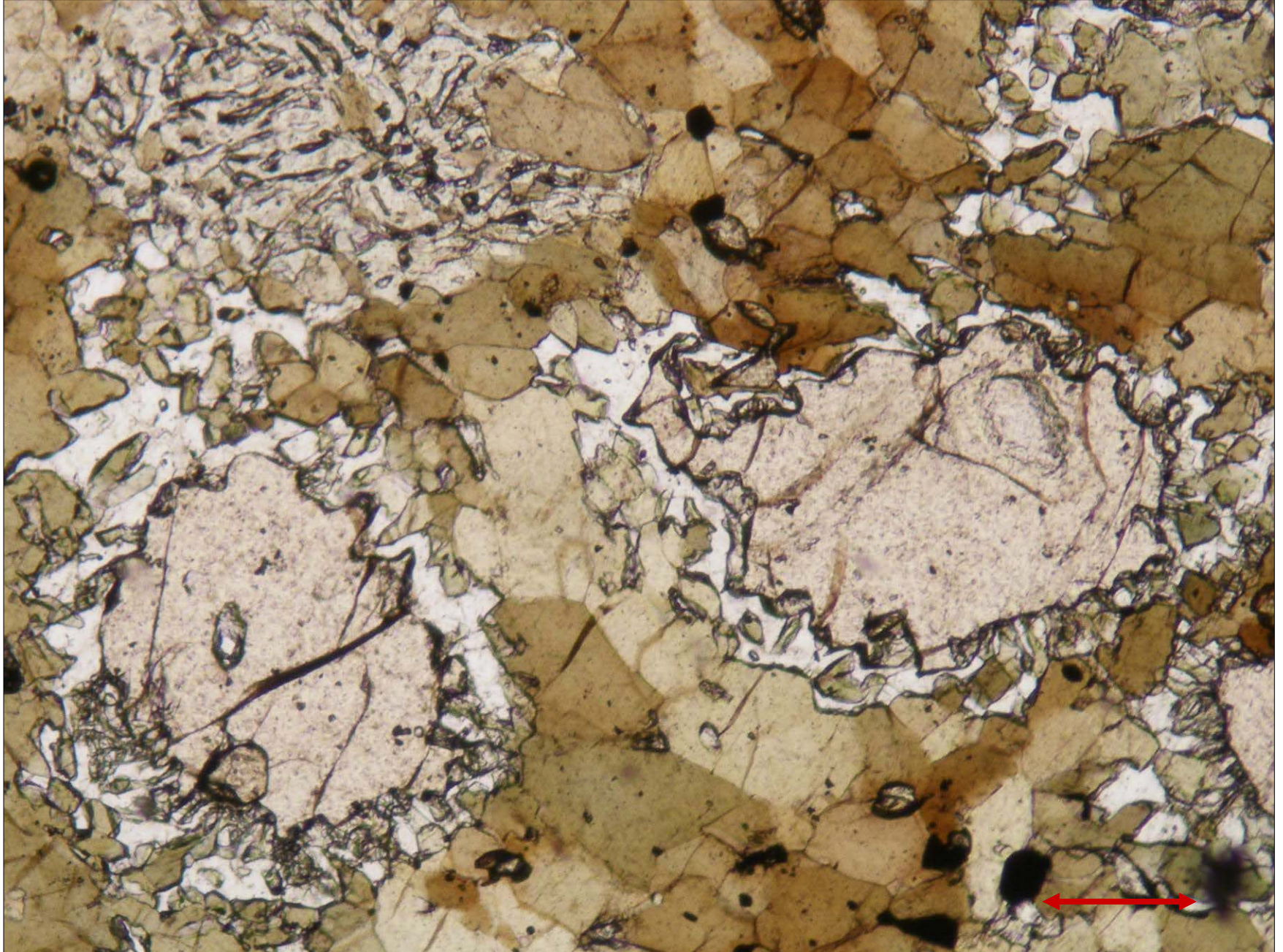
Garnet in garnet amphibolite from Police, the Czech Republic; PPL. Field of view is ca. 2.2 mm wide. Photo: JiZi.





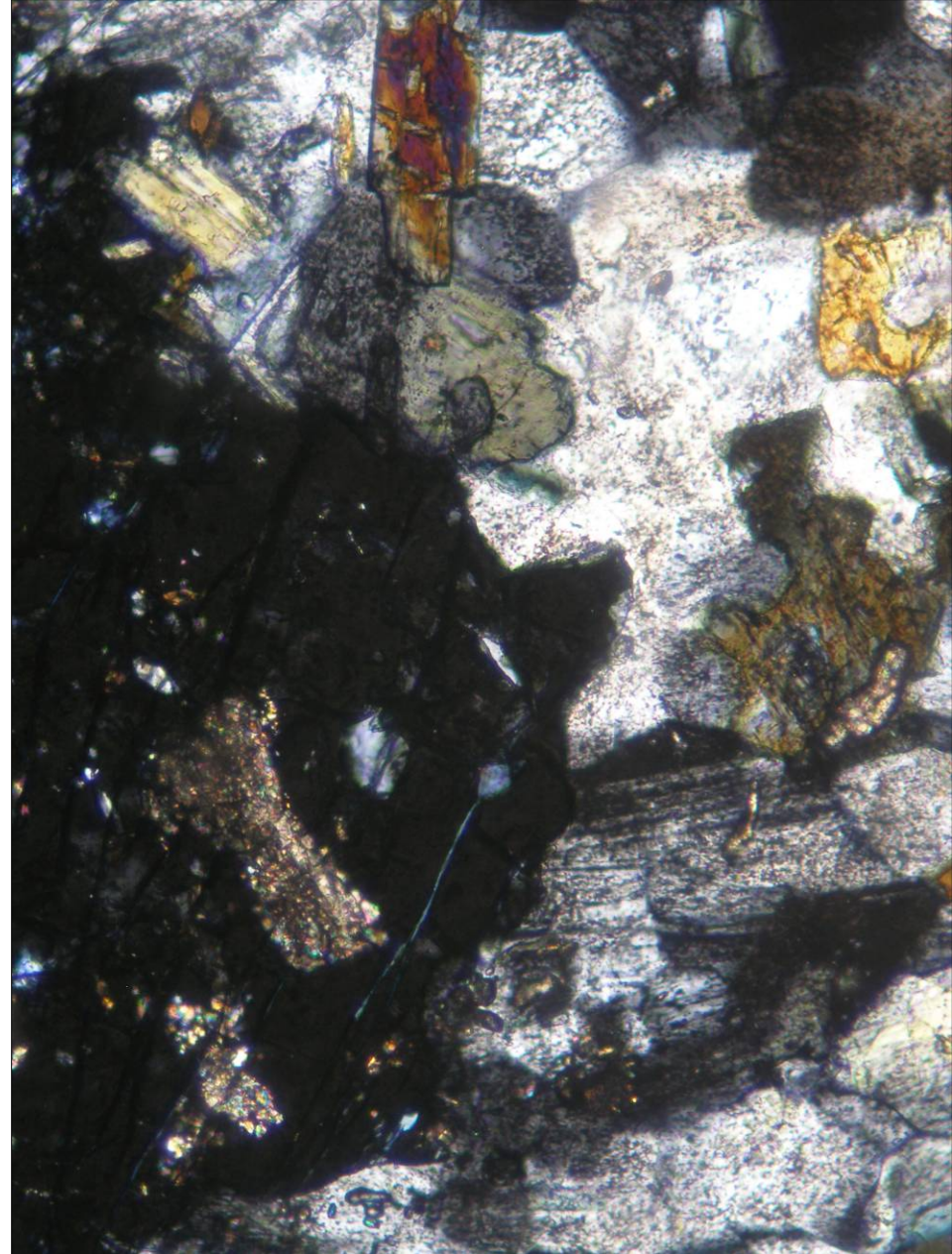
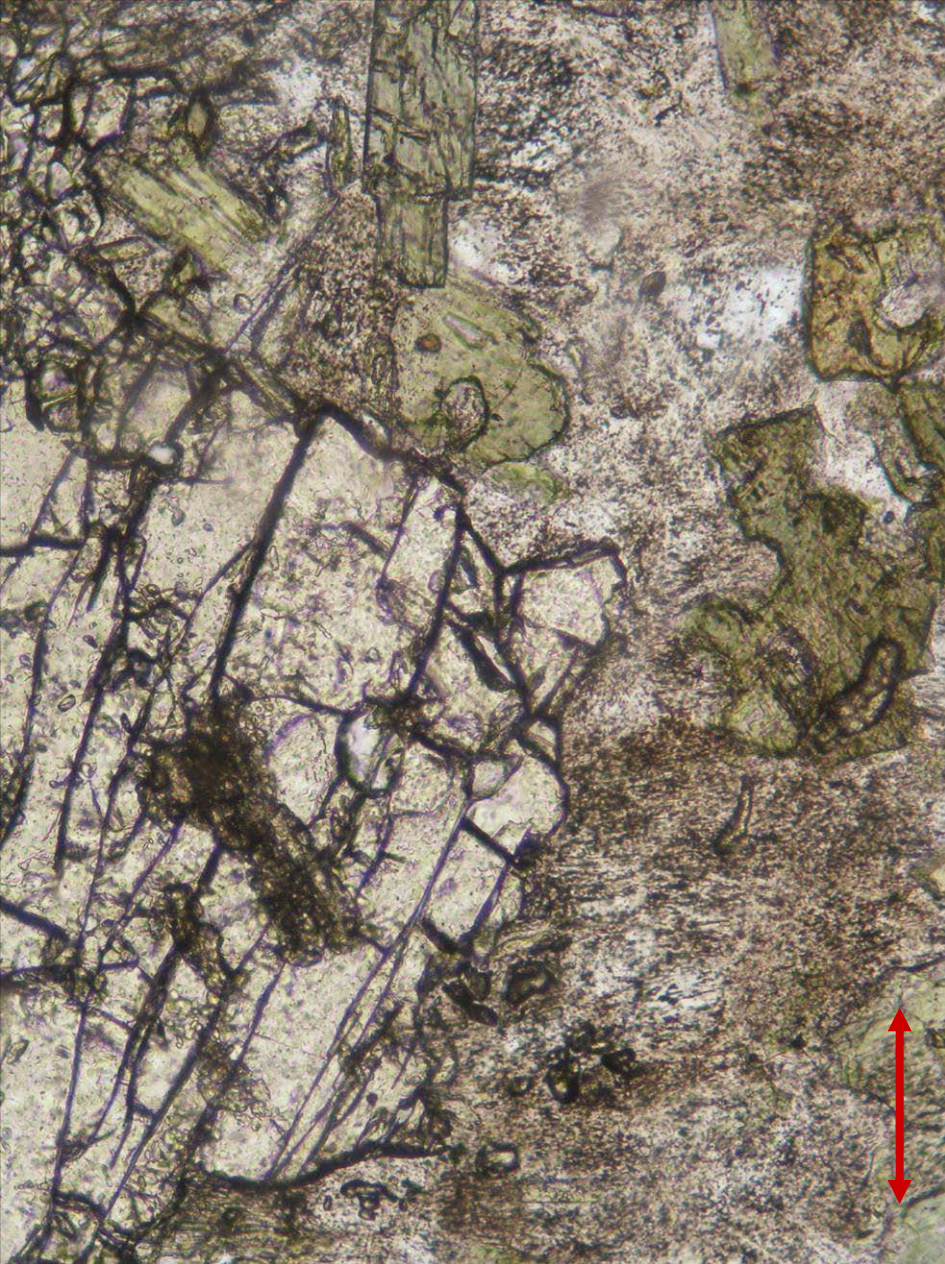
Garnet in garnet amphibolite from Mohelno, the Czech Republic; PPL. Field of view is ca. 2.0 mm wide. Photo: JiZi.





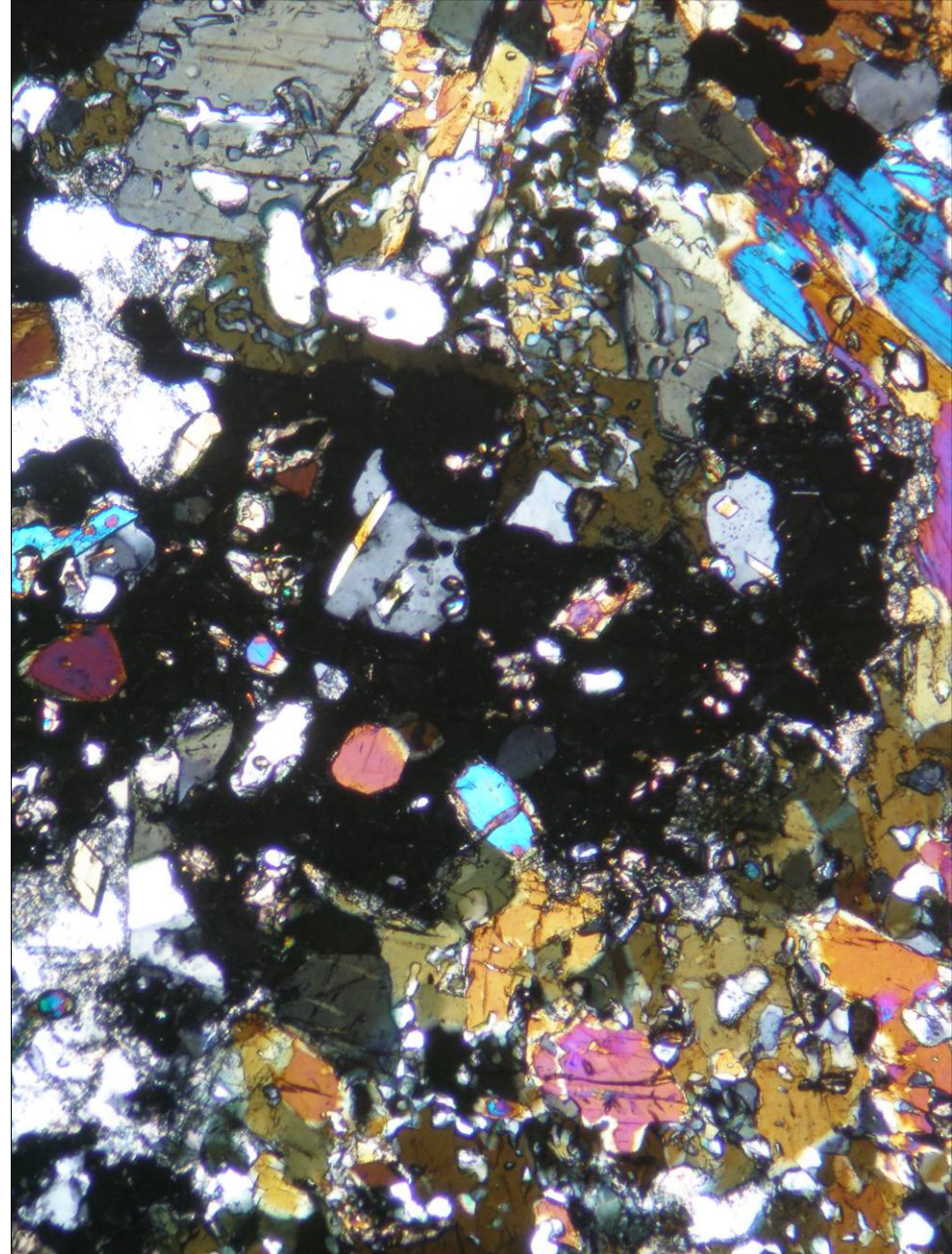
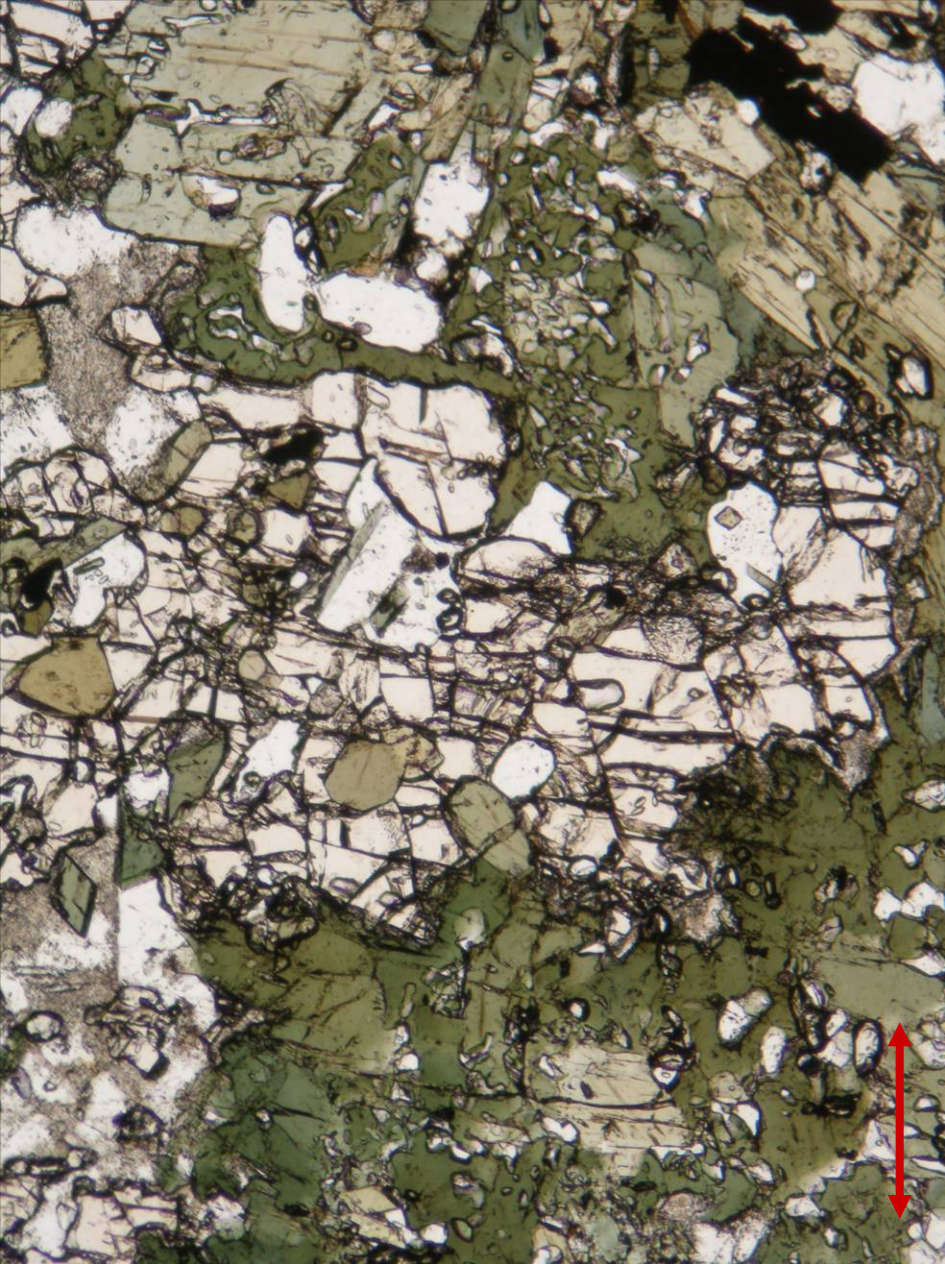
Garnet in garnet amphibolite from Mohelno, the Czech Republic; PPL. Field of view is ca. 1.5 mm wide. Photo: JiZi.





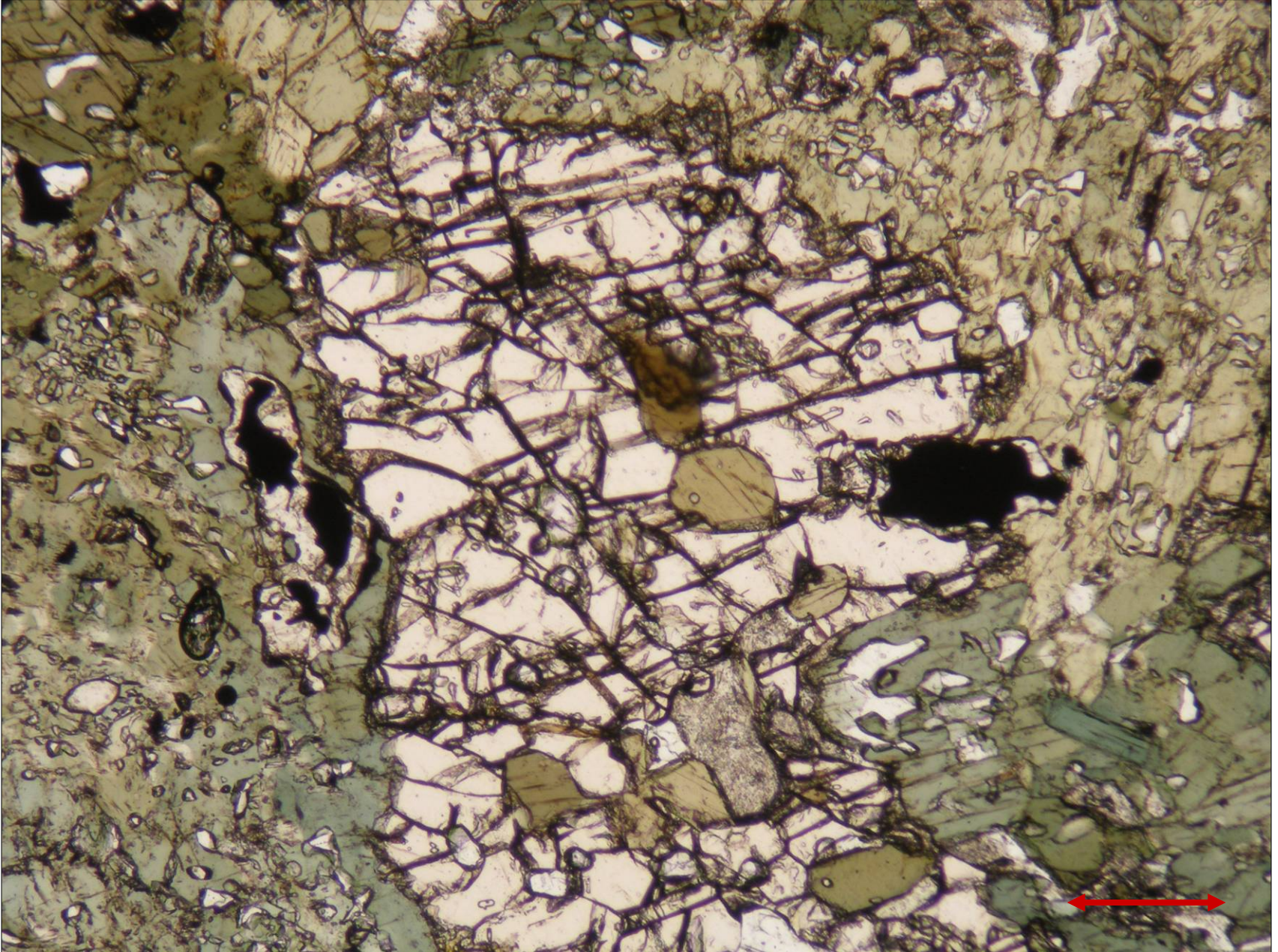
Garnet porphyroblast in garnet amphibolite from Petříkov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.5 mm. Photo: JiZi.





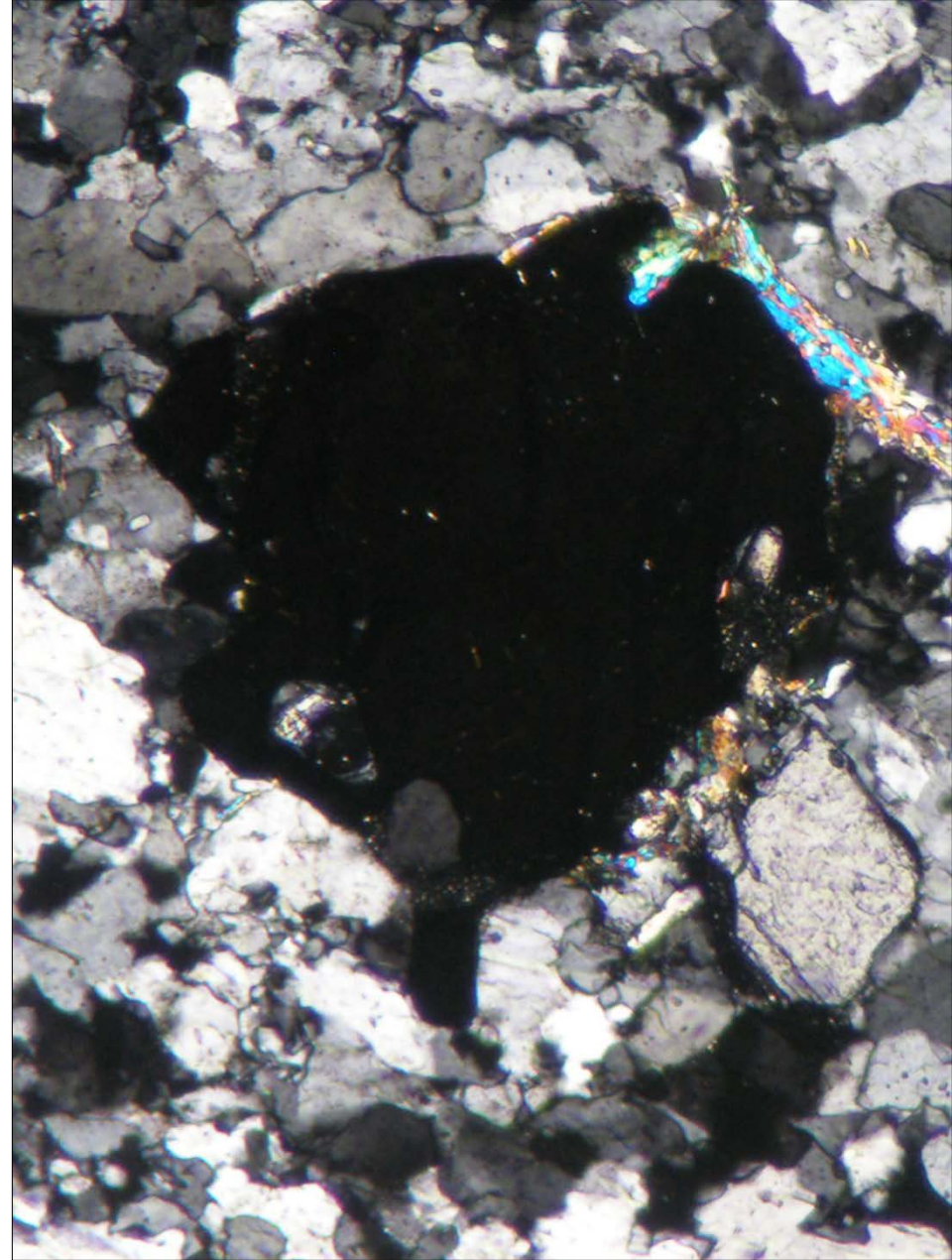
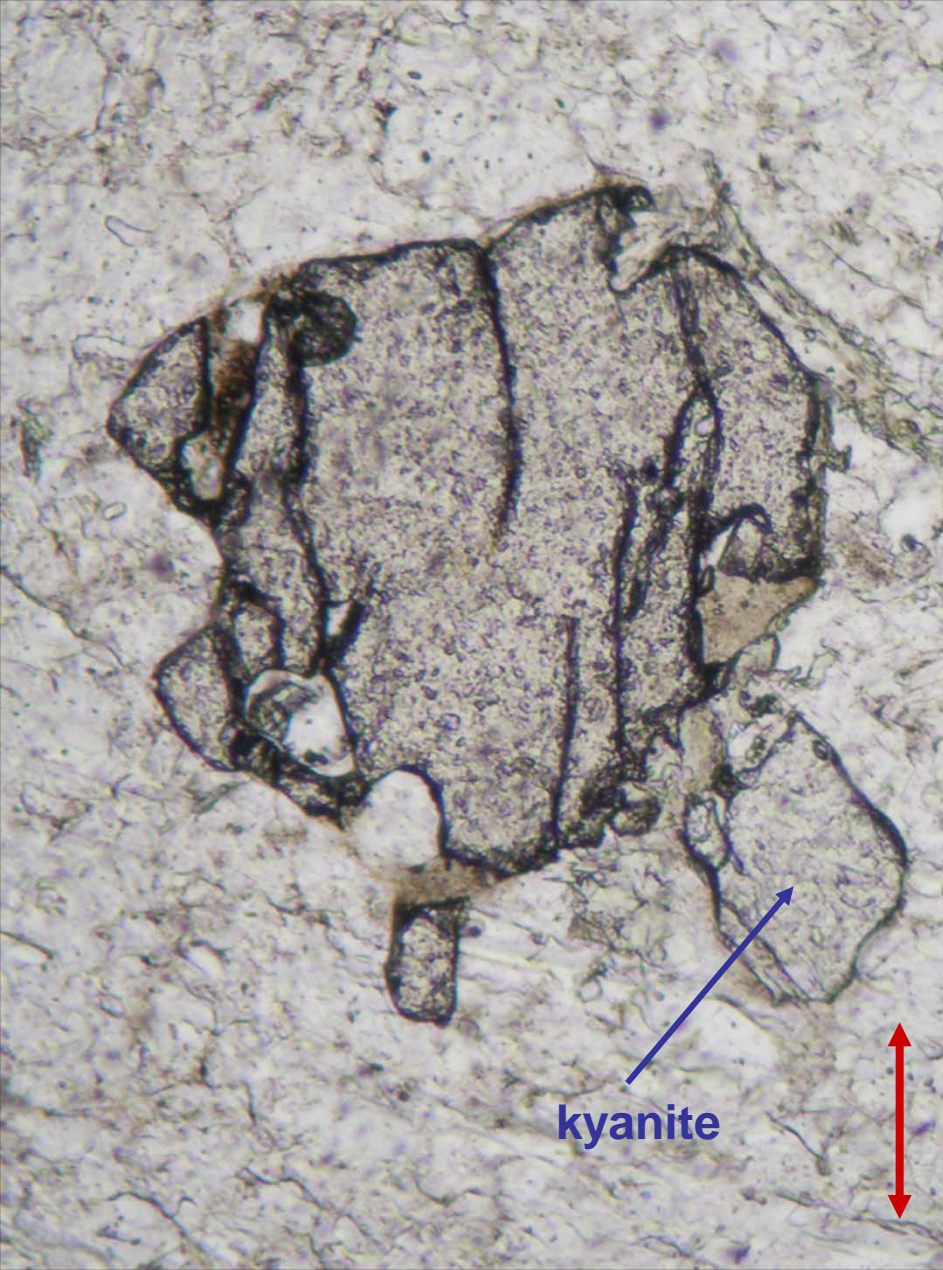
Garnet and hornblende in garnet amphibolite from Vranov nad Dyjí, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





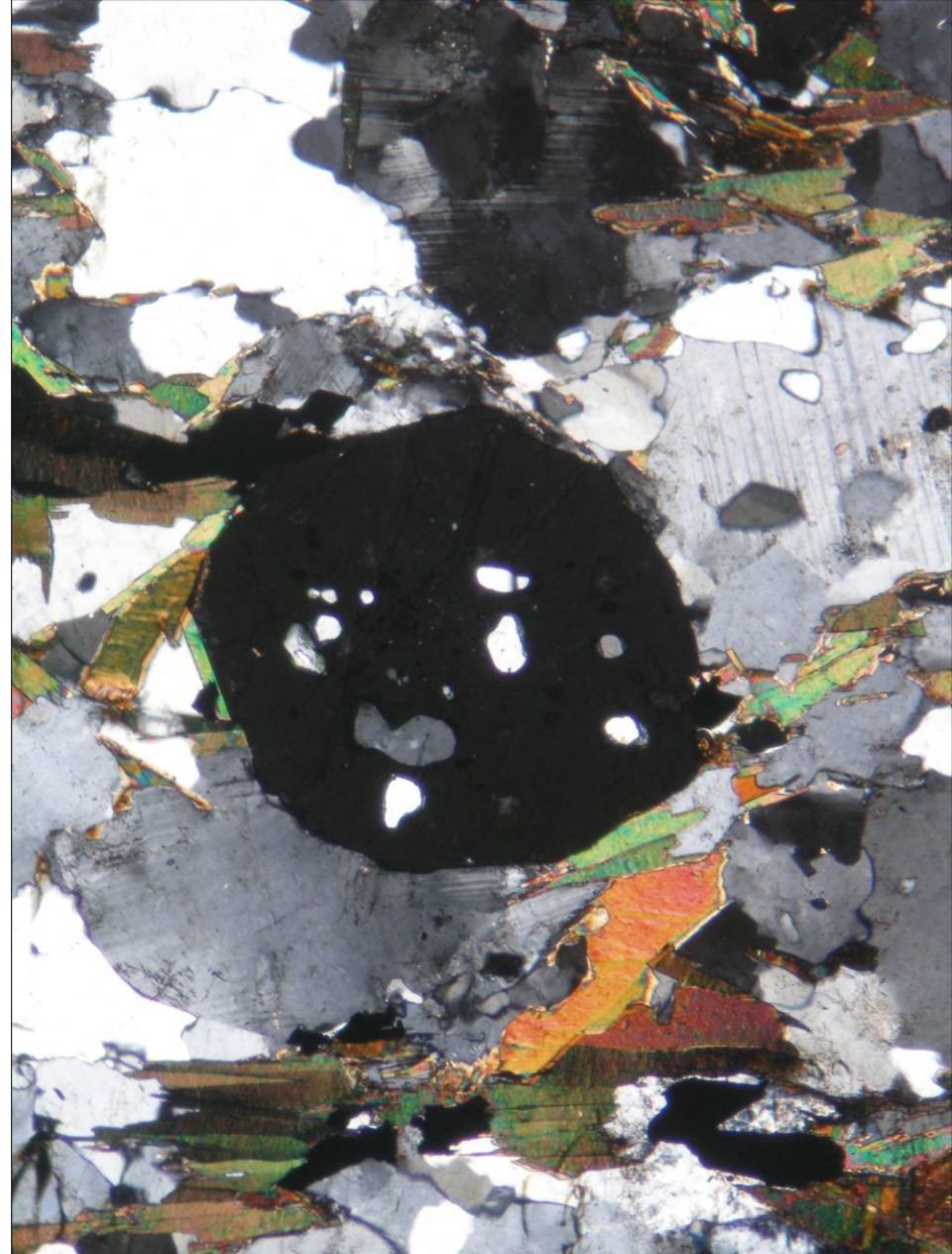
Garnet and hornblende in garnet amphibolite from Vranov nad Dyjí, the Czech Republic; PPL. Field of view is ca. 2.2 mm wide. Photo: JiZi.





Garnet and kyanite in granulite from Plešovice, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.7 mm. Photo: JiZi.





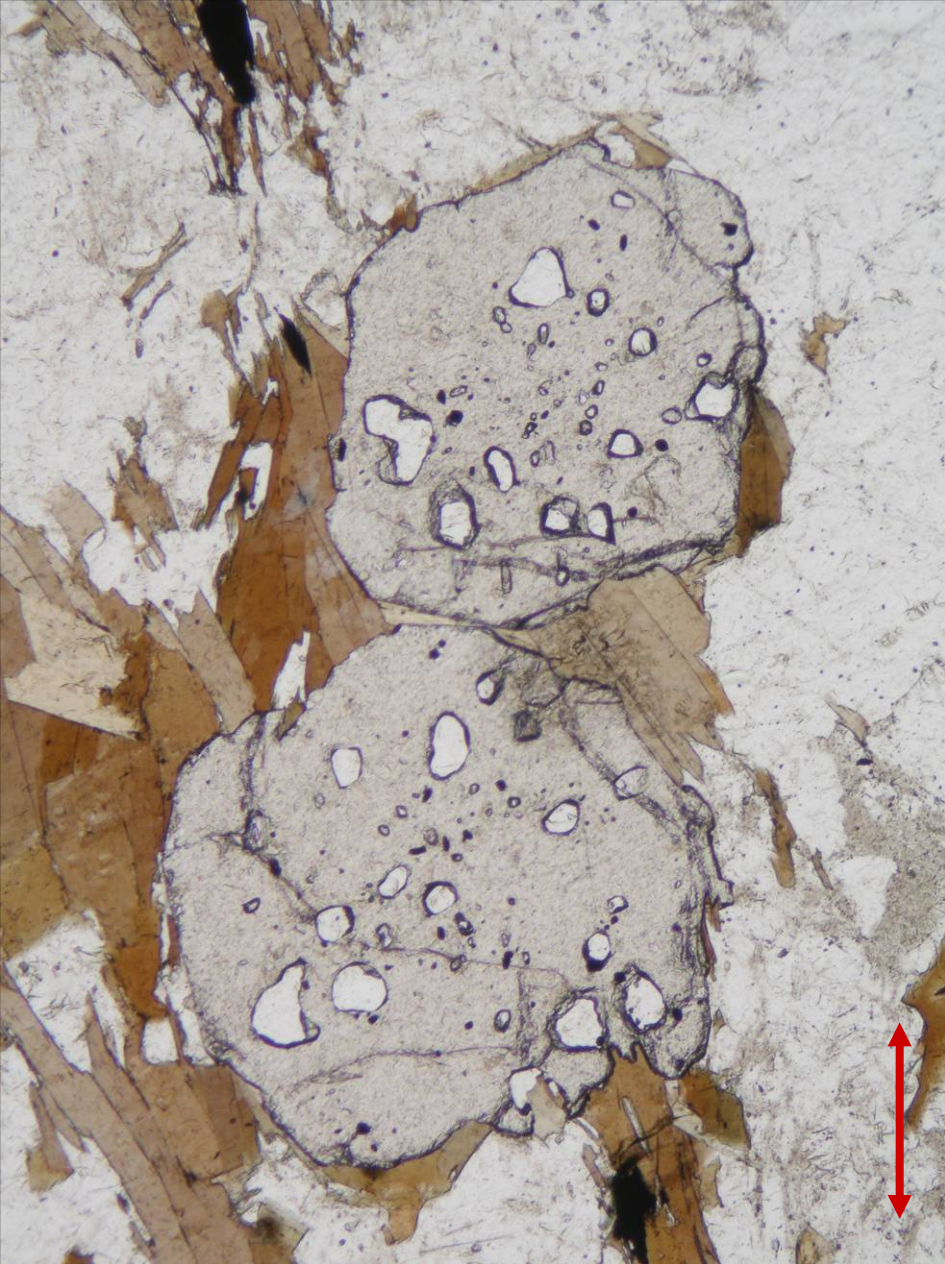
Poikiloblastic garnet in paragneiss from Dolní Rožínka, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





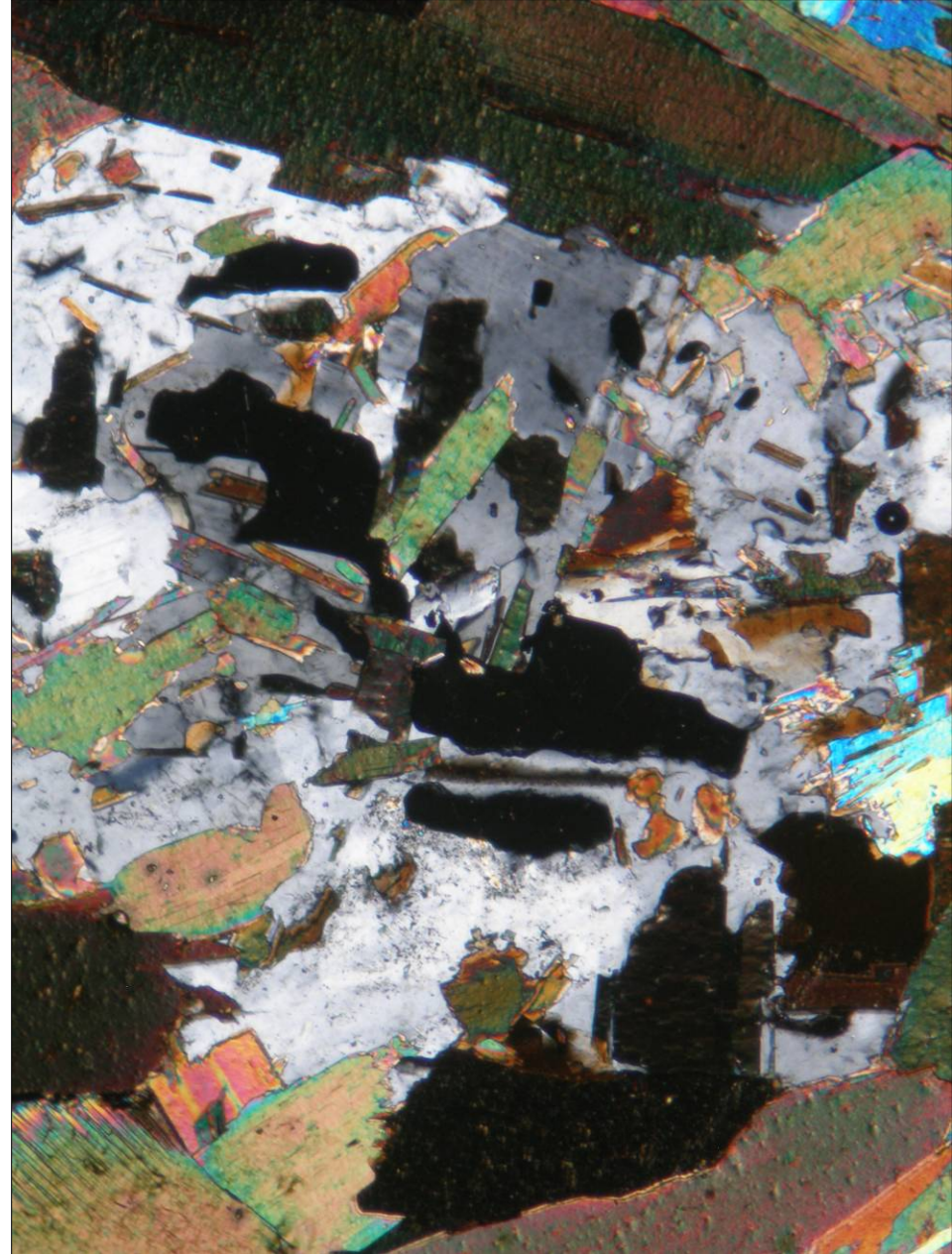
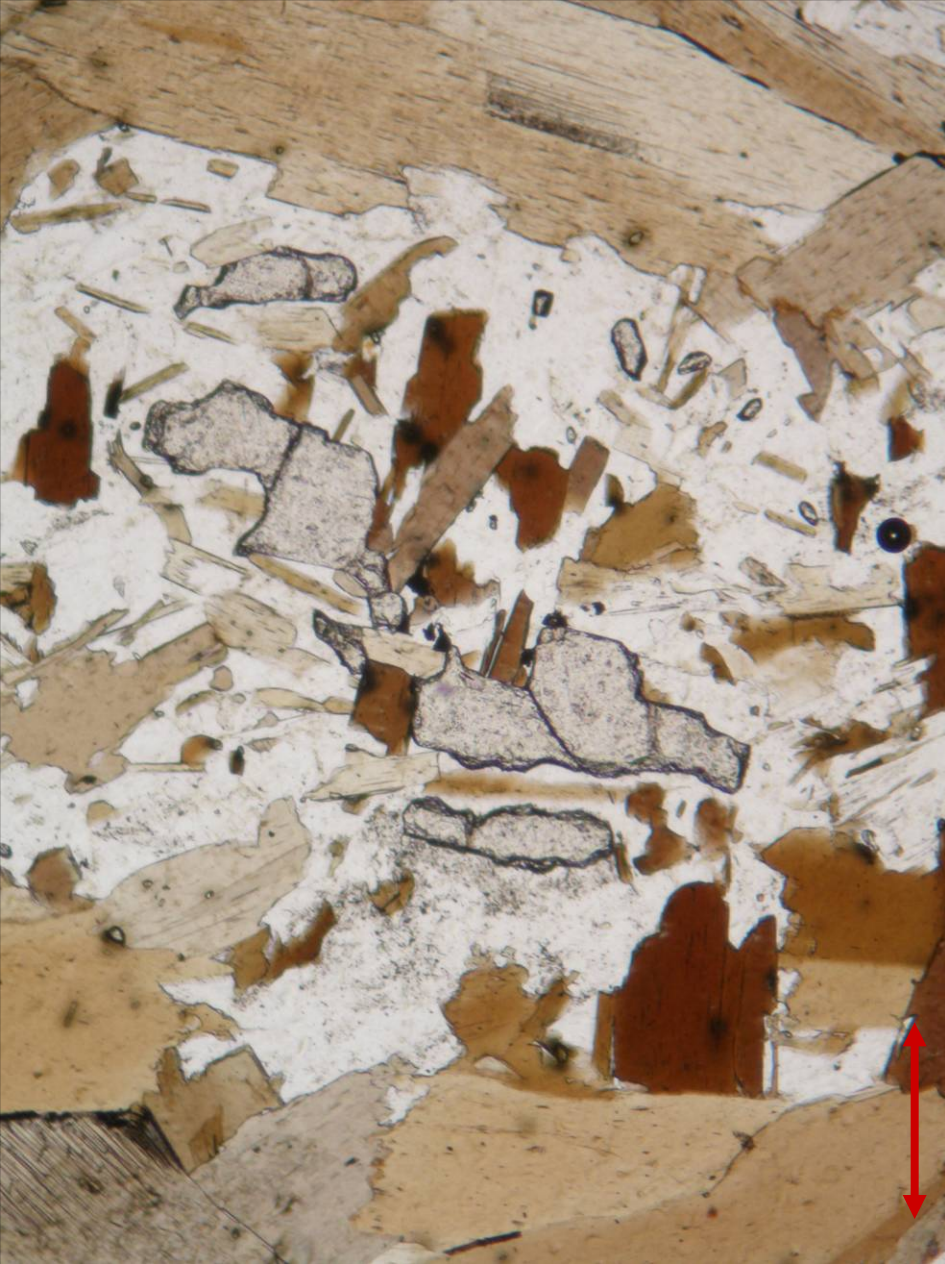
Poikiloblastic garnet in paragneiss from Dolní Rožínka, the Czech Republic; PPL. Width of the field of view is ca. 2.2 mm. Photo: JiZi.





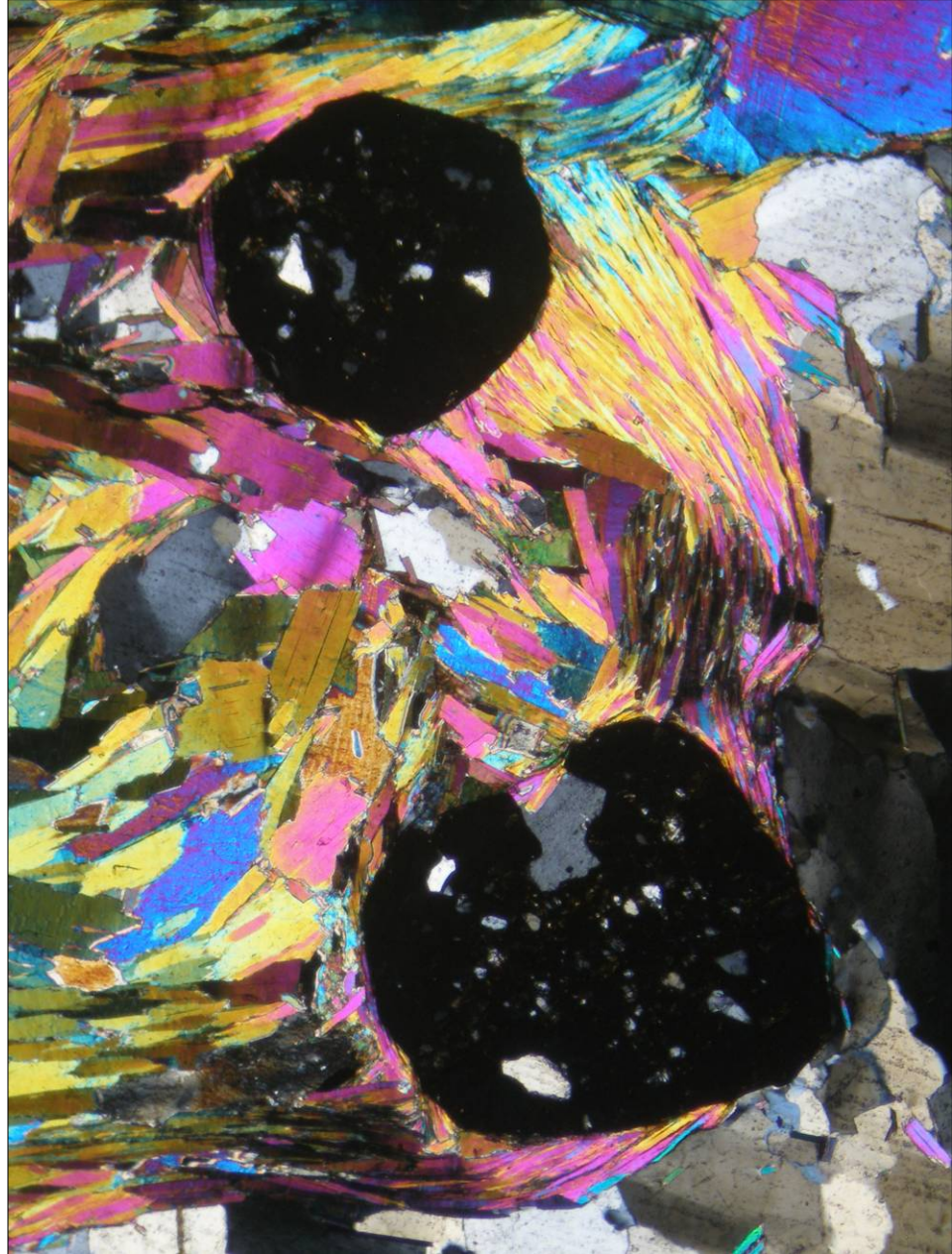
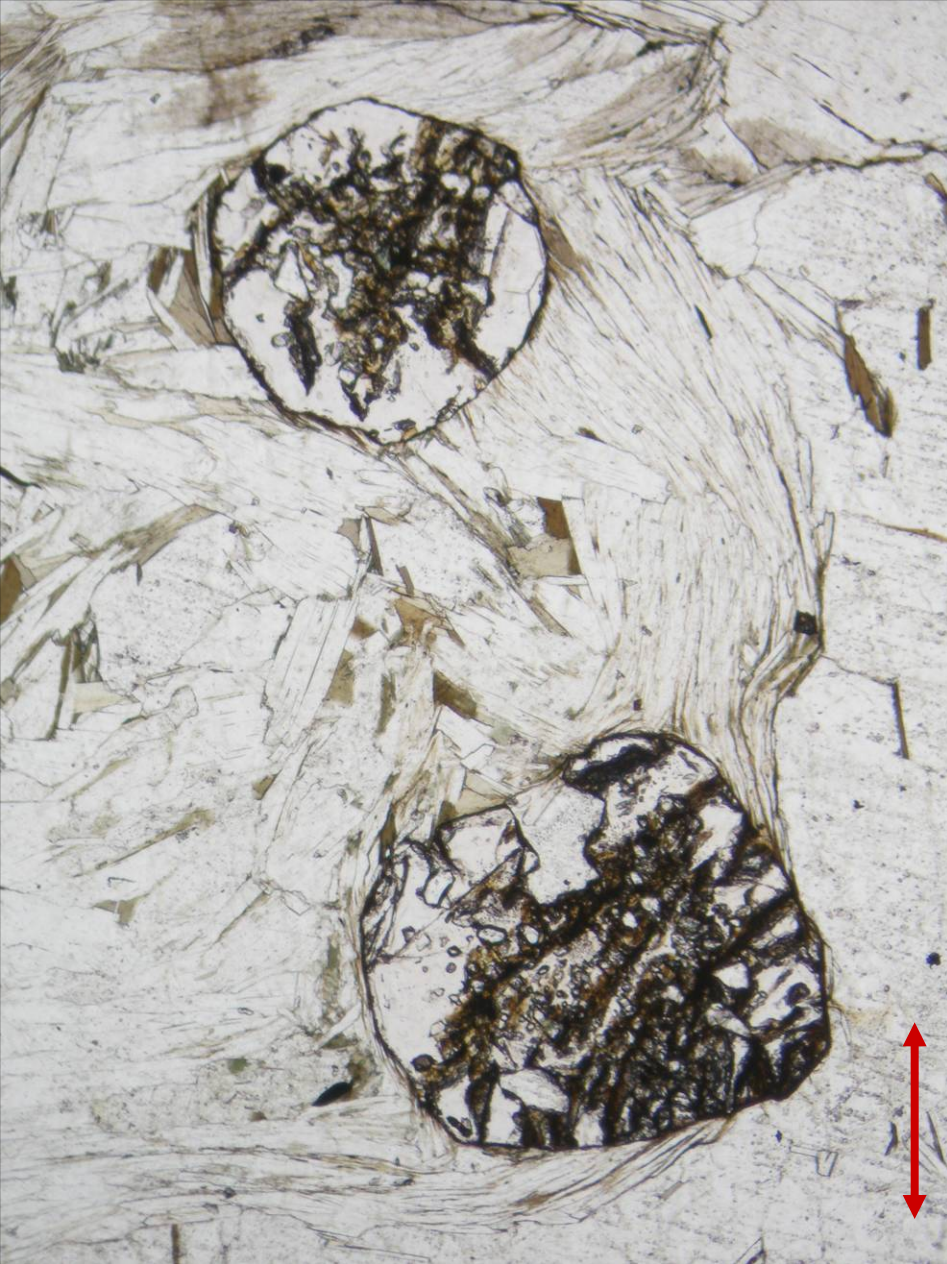
Poikiloblastic garnet in paragneiss from Dolní Rožínka, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





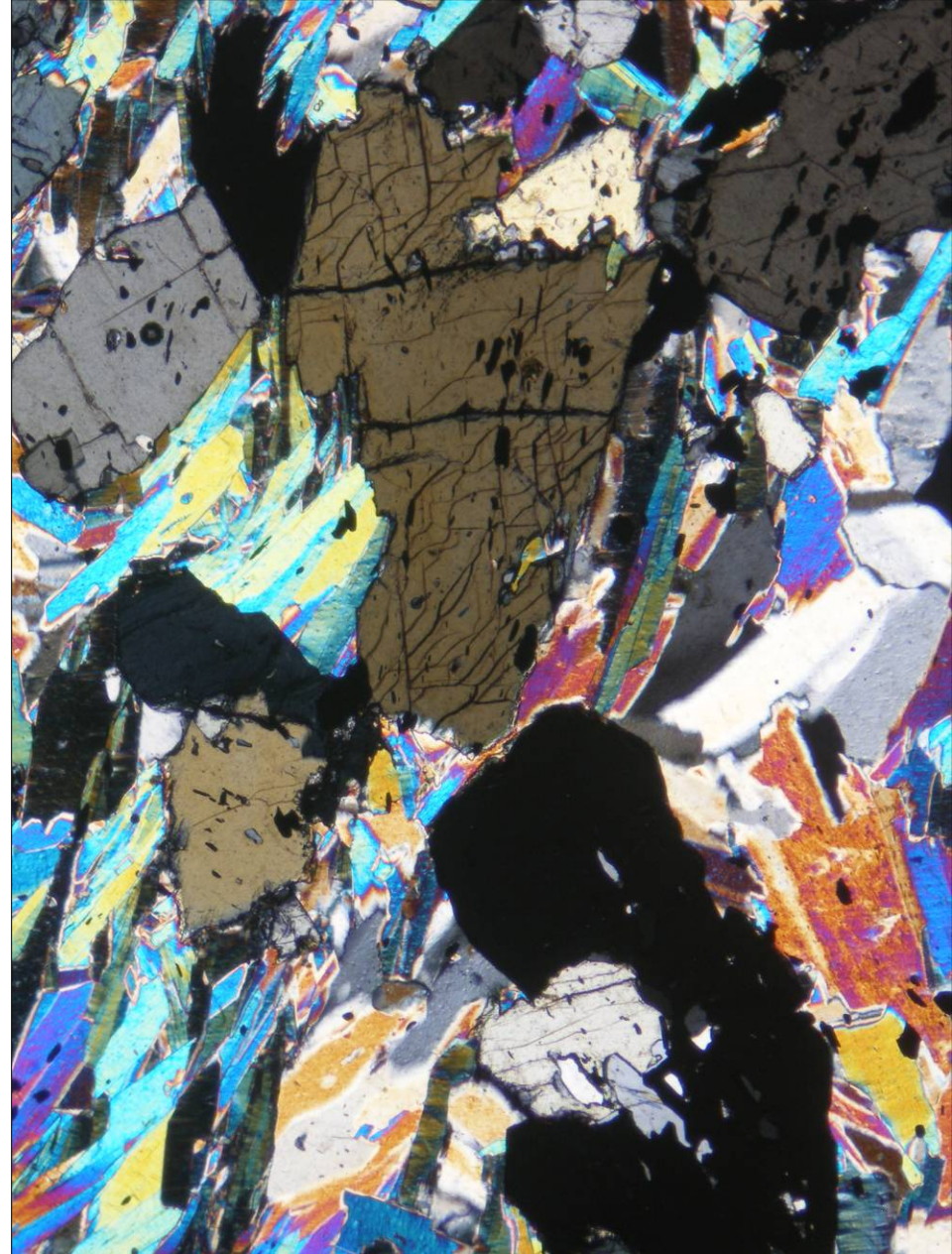
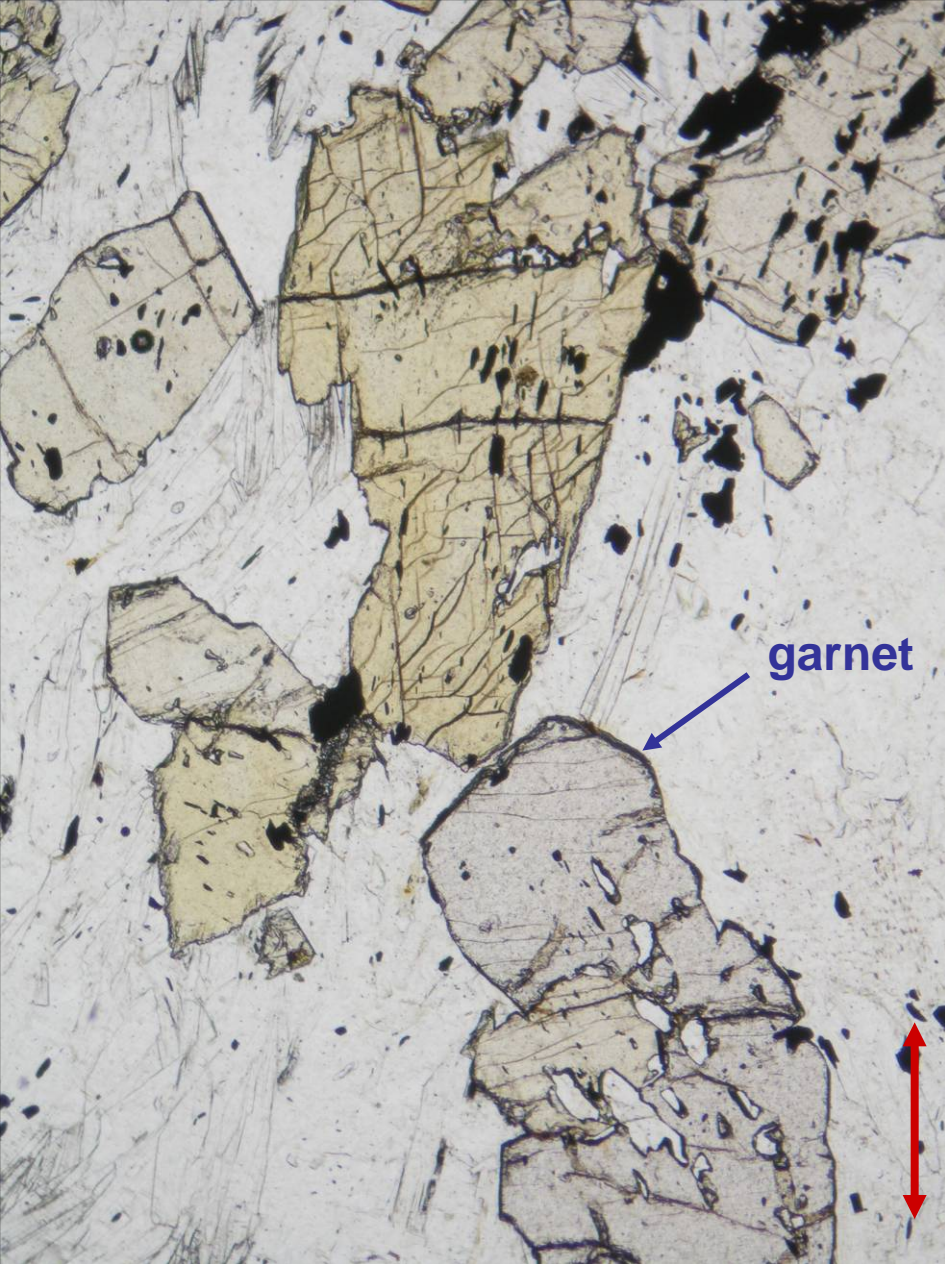
Garnet in gneiss from Žulová, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





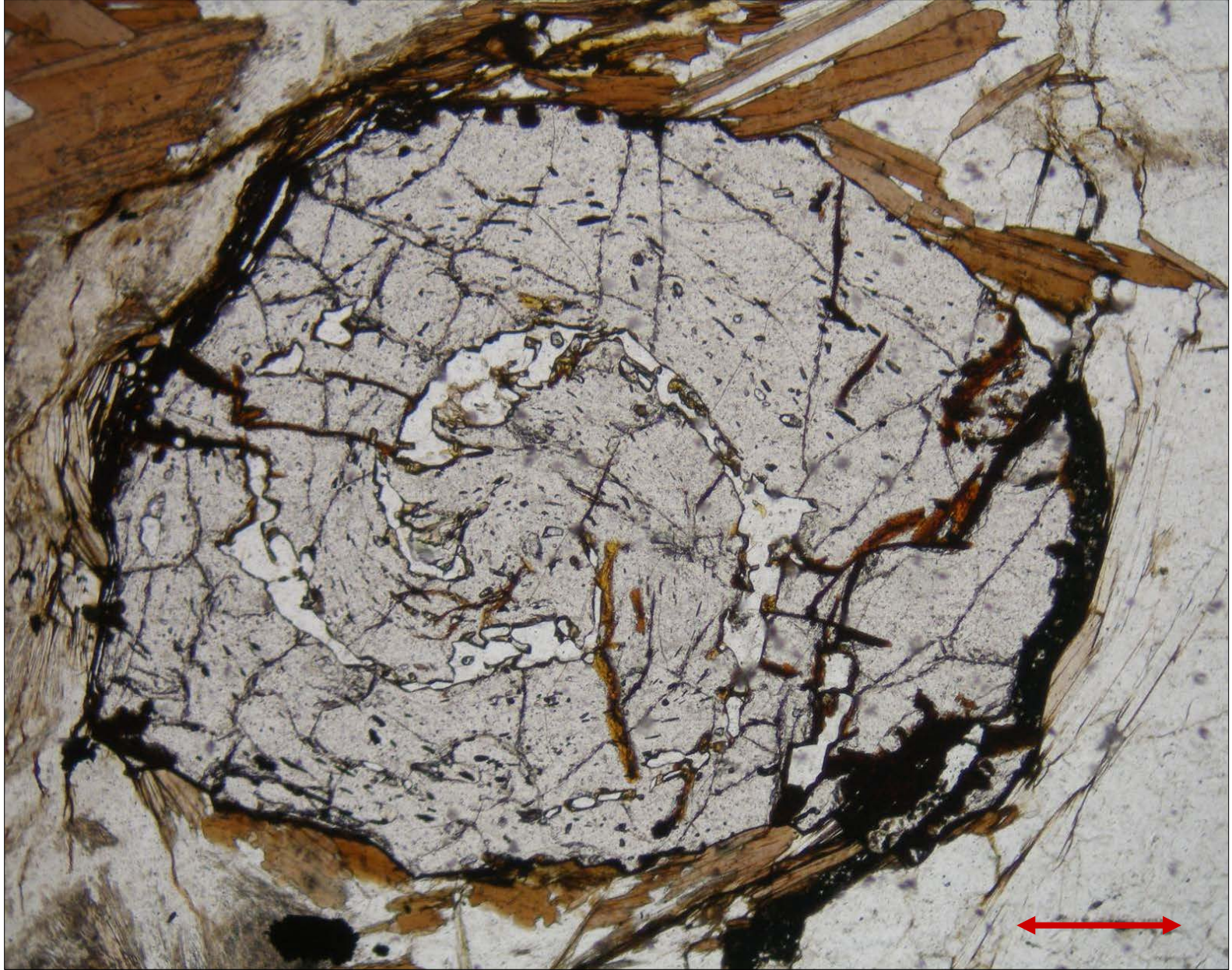
Garnet in mica schist from Svojanov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.0 mm. Photo: JiZi.





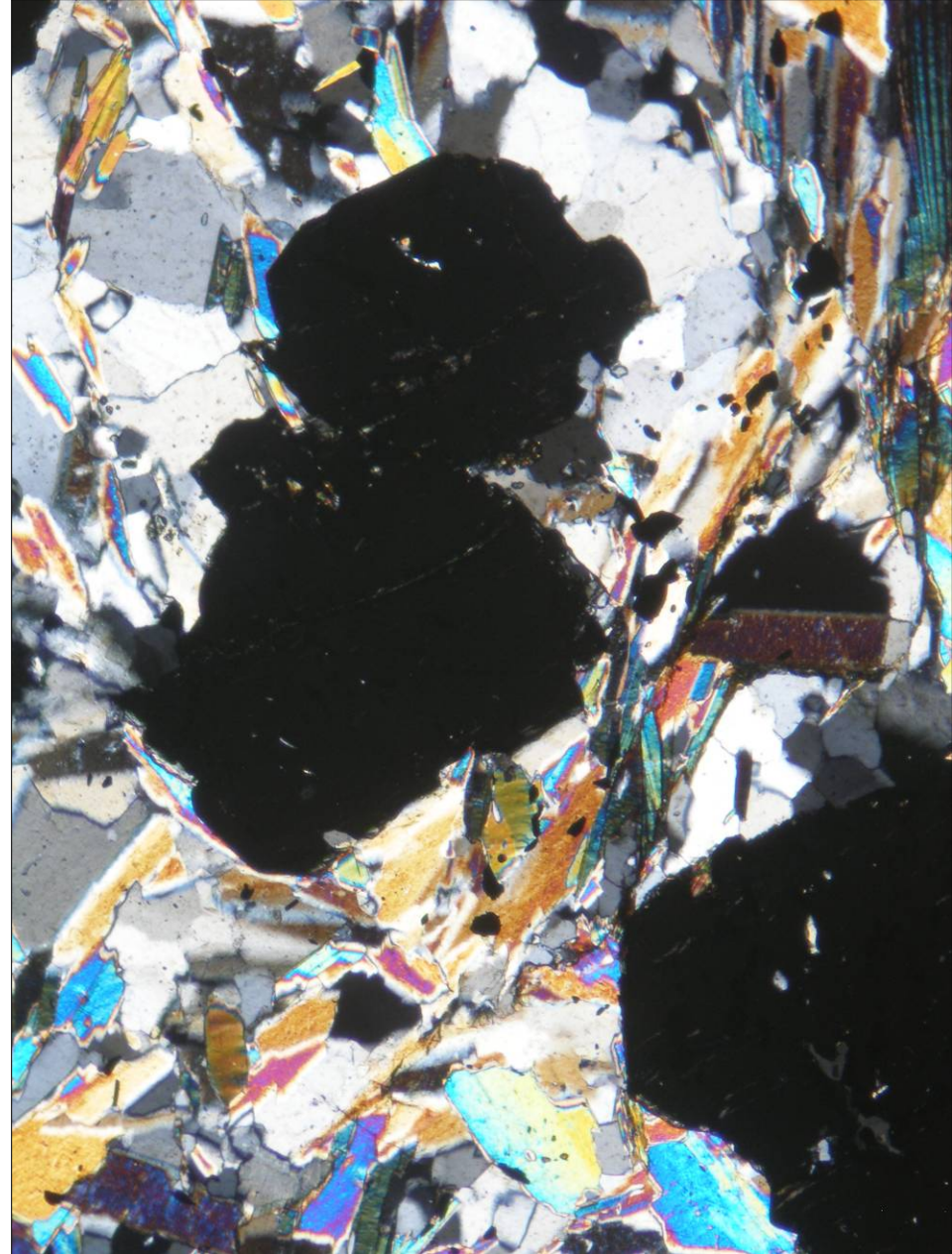
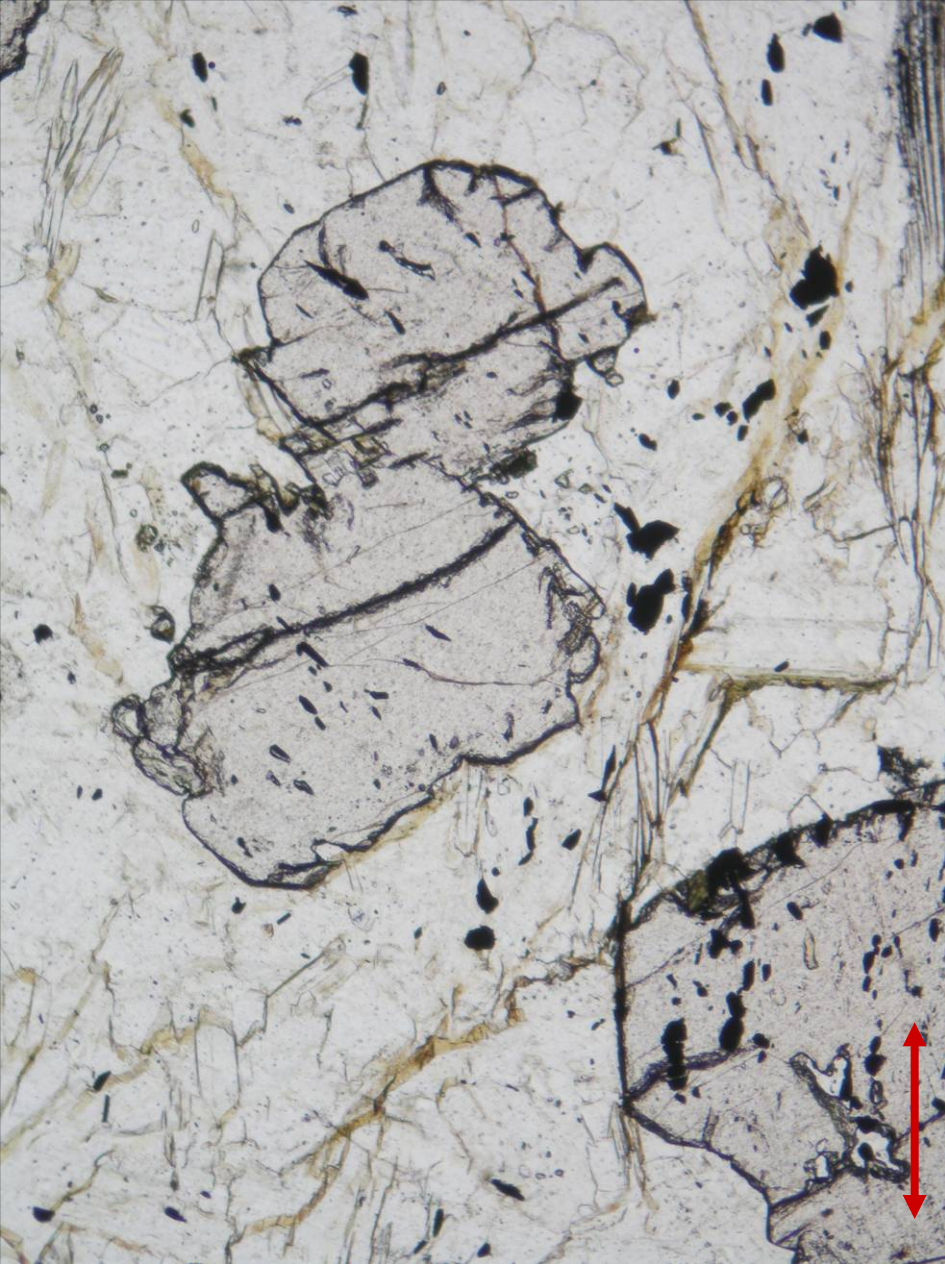
Garnet and staurolite in mica schist from Petrov nad Desnou, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.0 mm. Photo: JiZi.





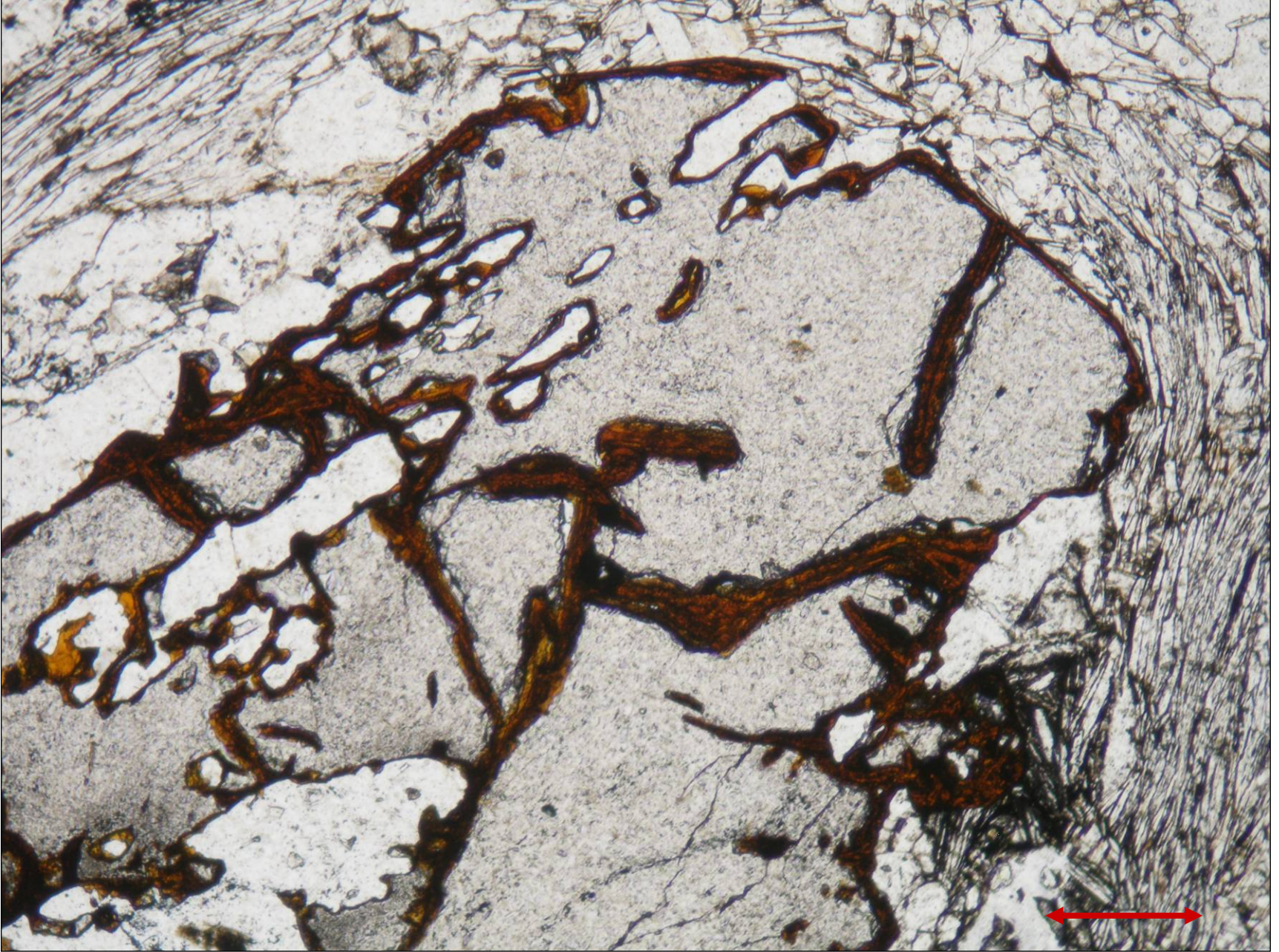
“Snowball garnet“ (with spiral discontinuous lines of quartz inclusions) in mica schist from Kovářová, the Czech Republic; PPL. Width of the field of view is ca. 2.8 mm. Photo: JiZi.





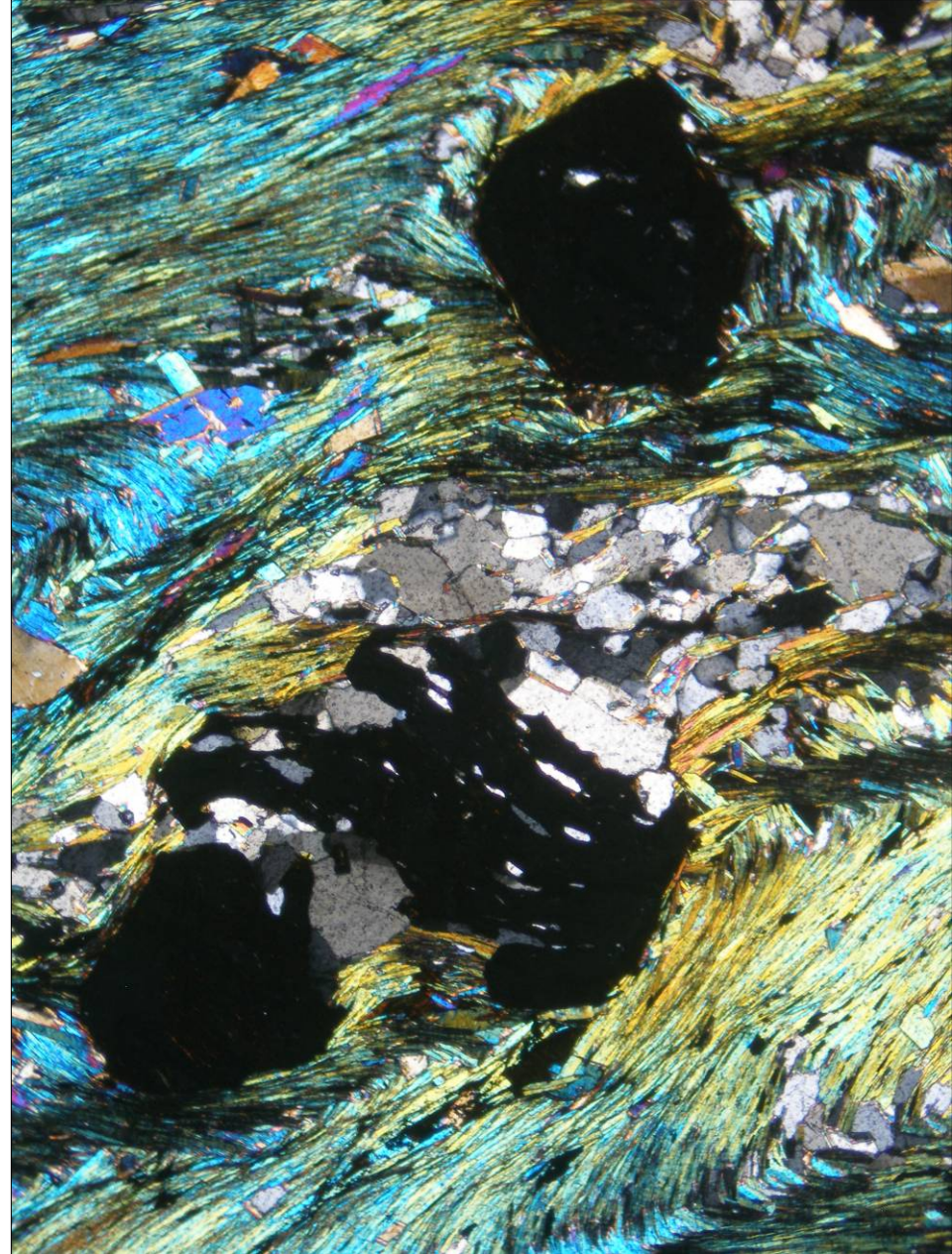
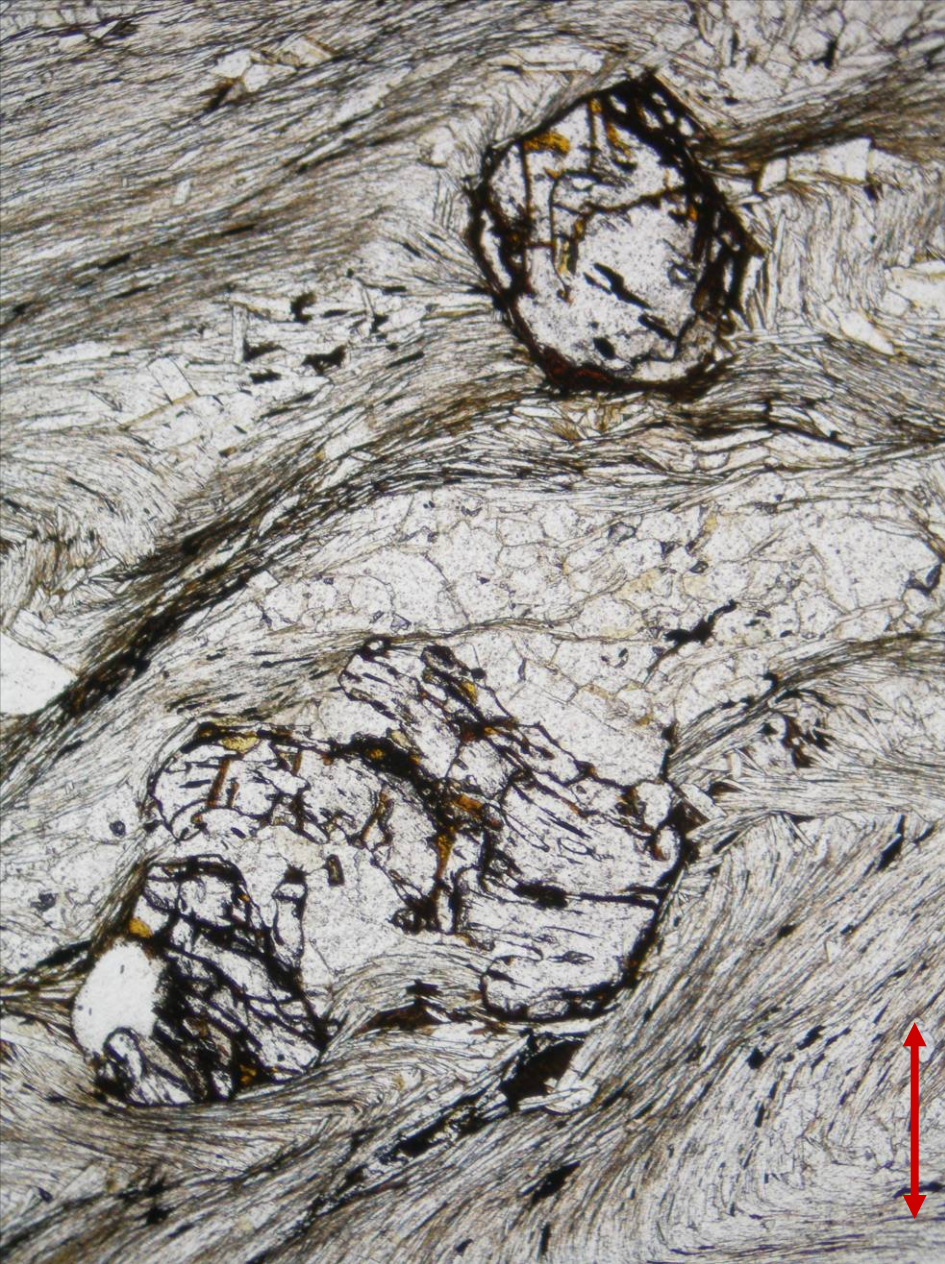
Garnet in mica schist from Petrov nad Desnou, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.0 mm. Photo: JiZi.





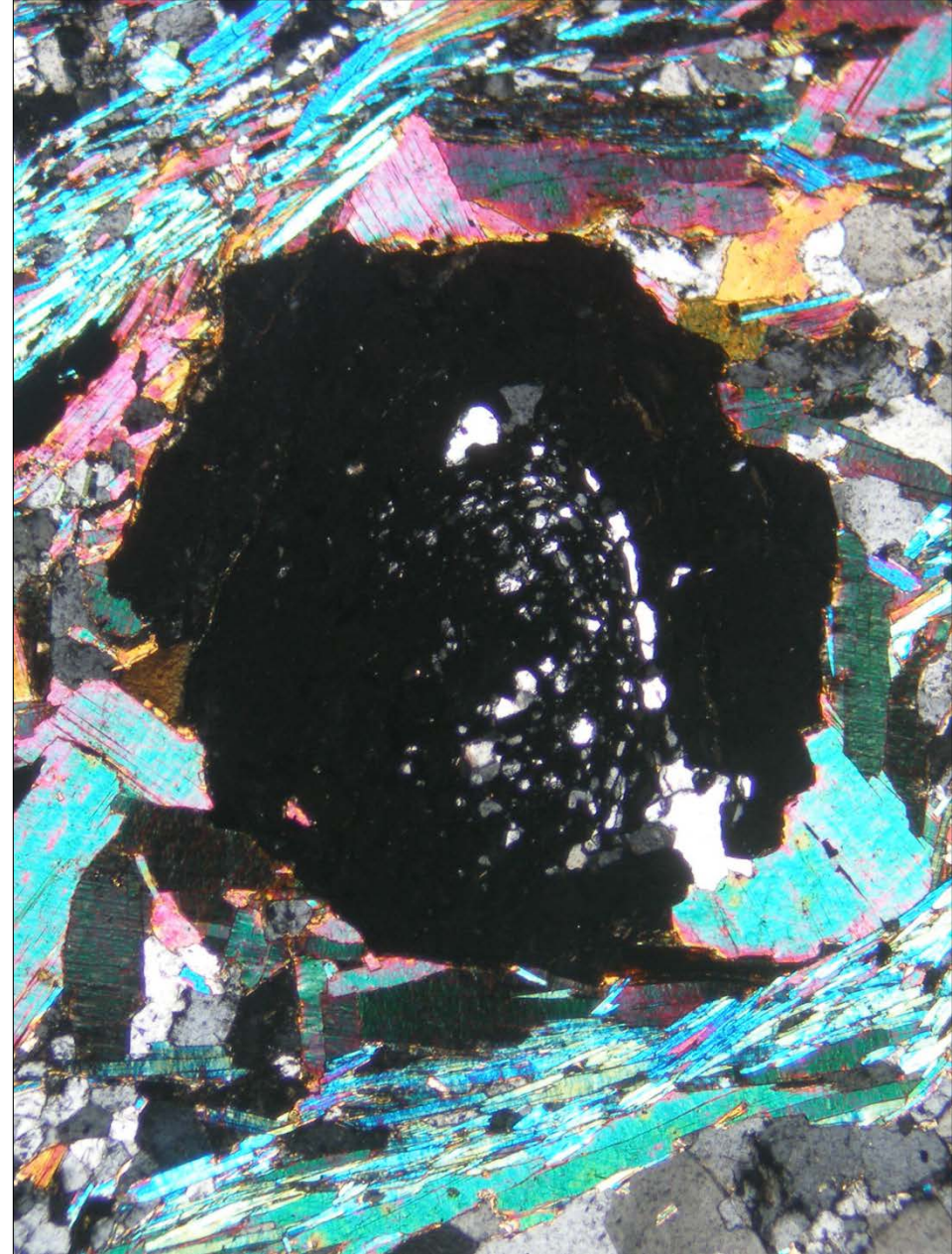
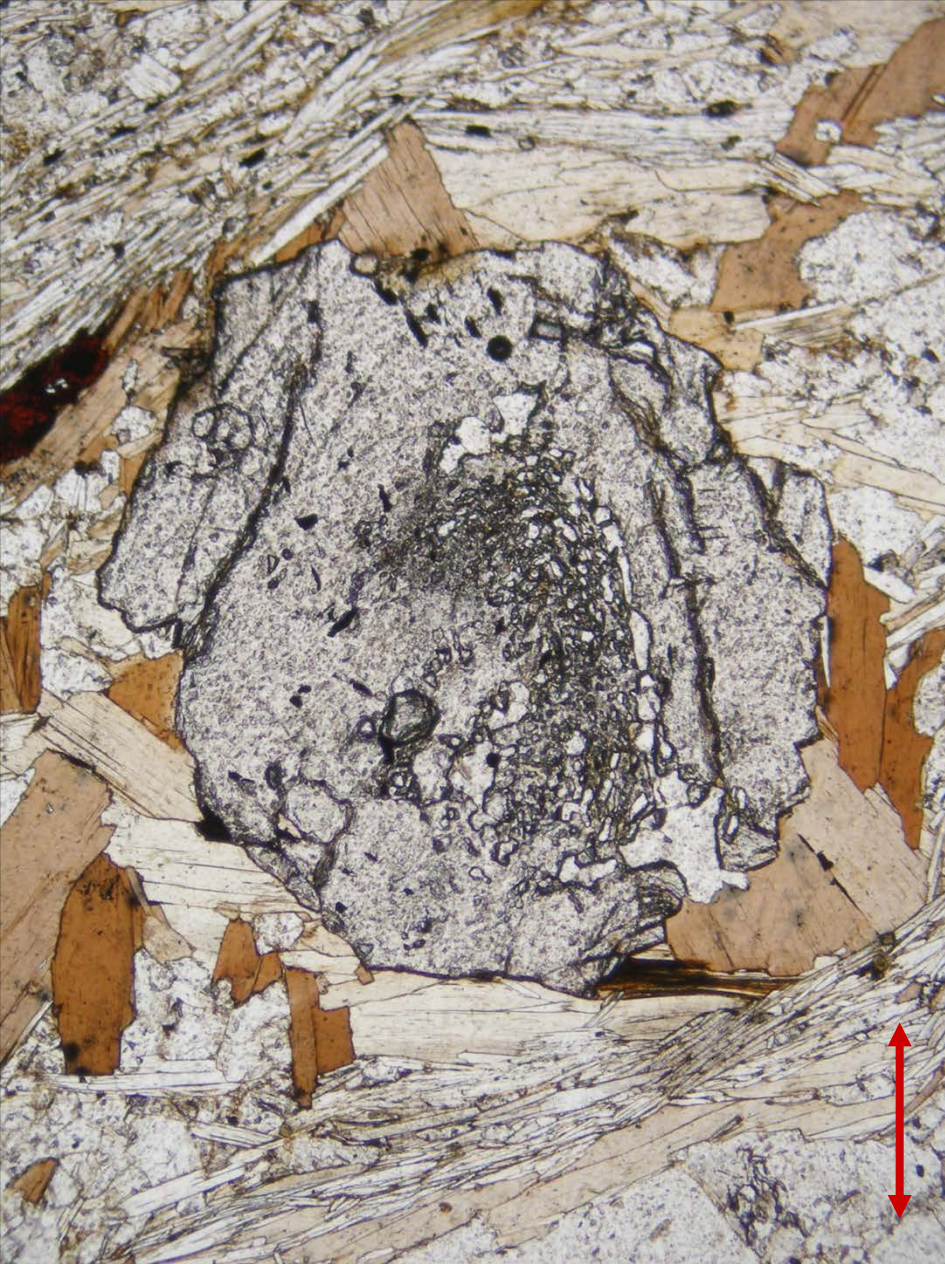
Garnet with iron oxides alteration along cracks in mica schist from Petrov nad Desnou, the Czech Republic; PPL. Width of the field of view is ca. 2.8 mm. Photo: JiZi.





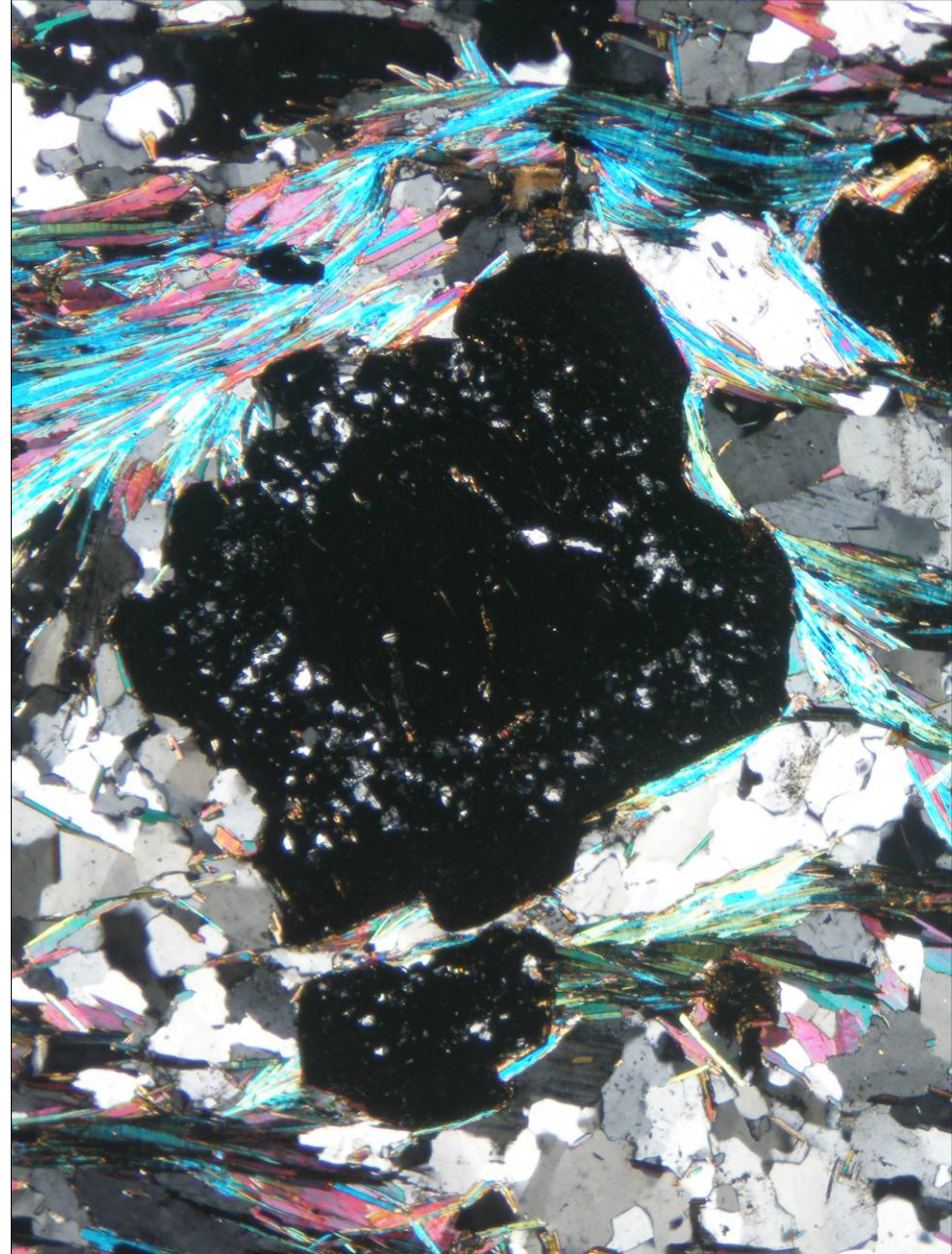
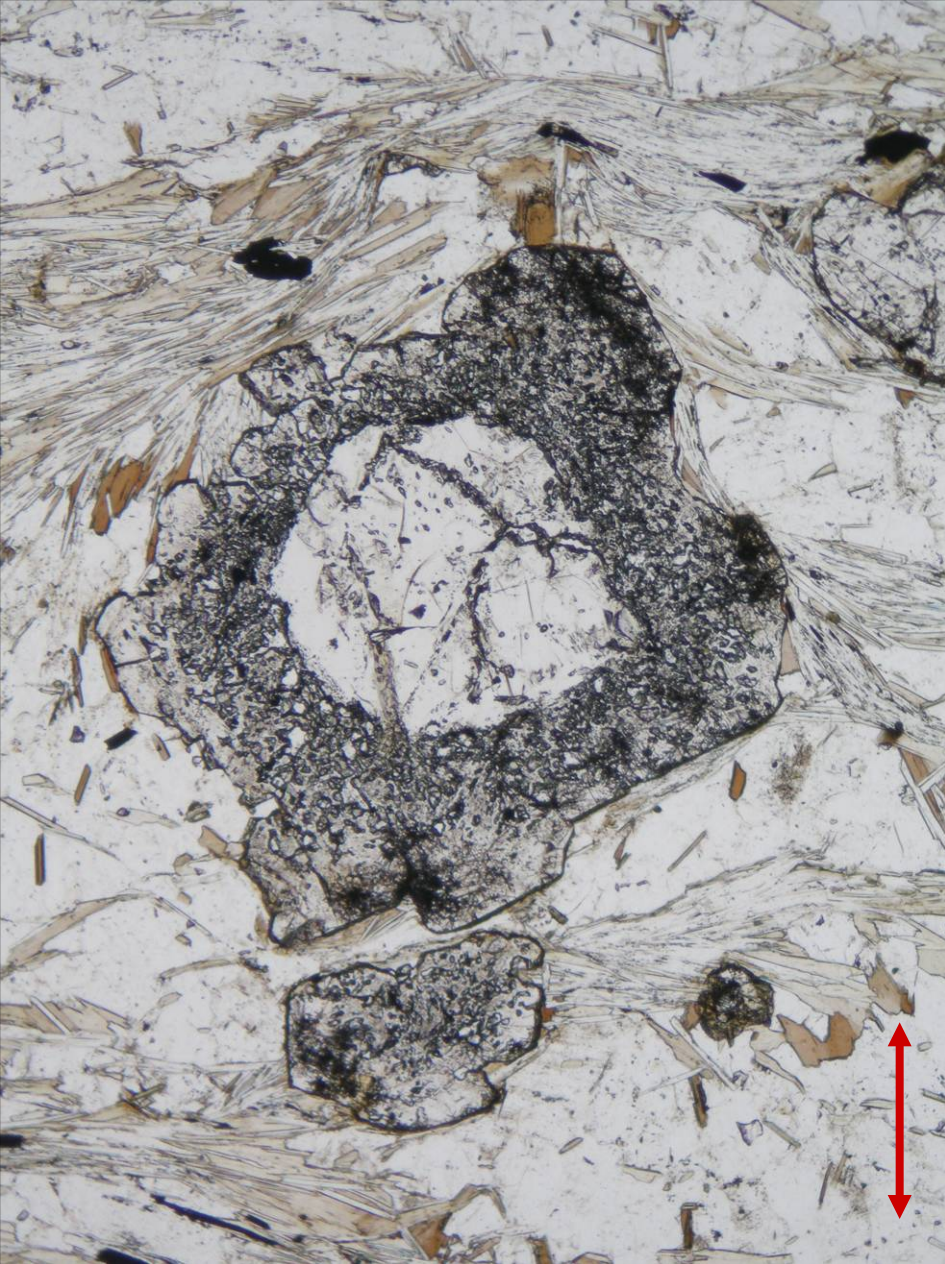
Garnet in mica schist from Králec, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





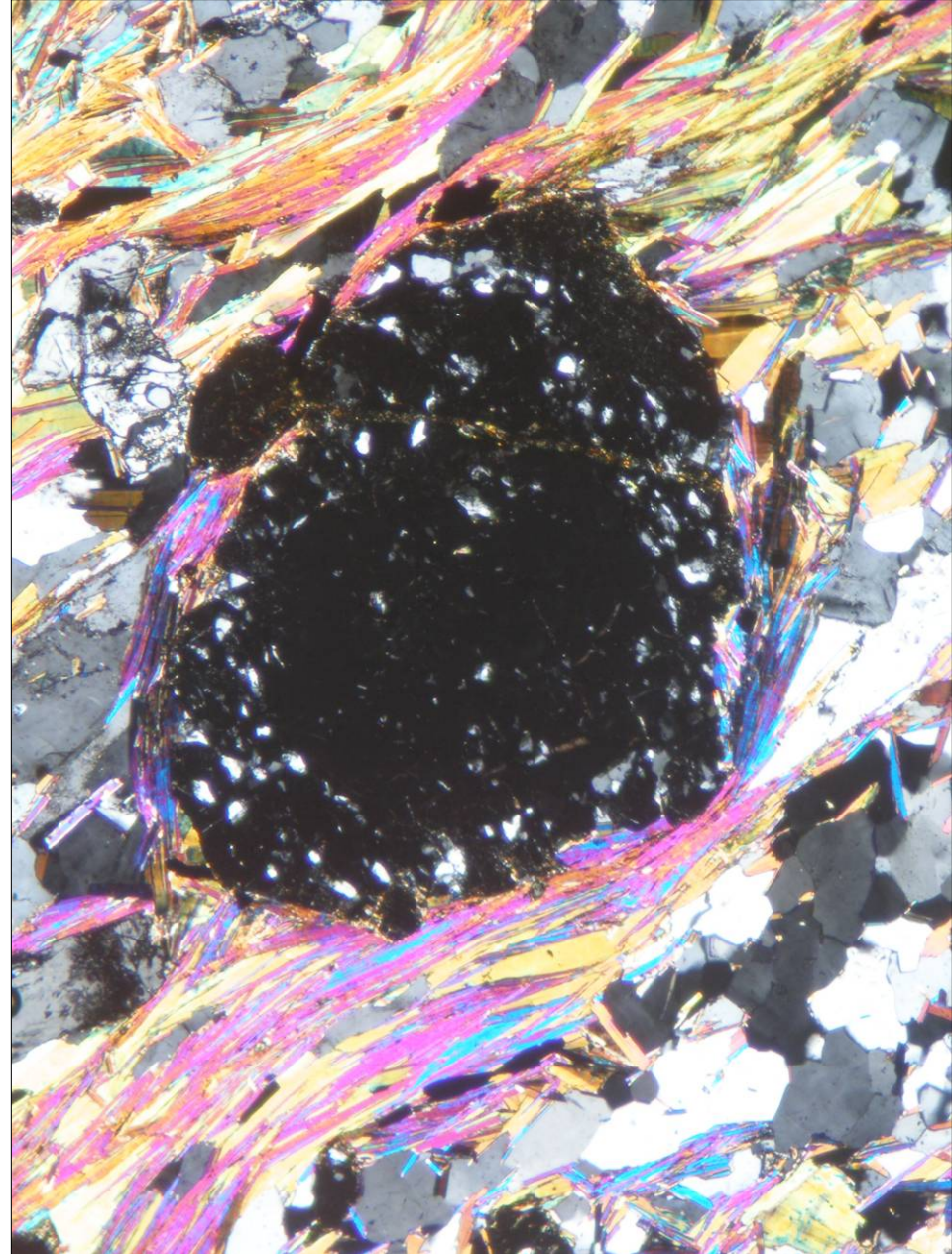
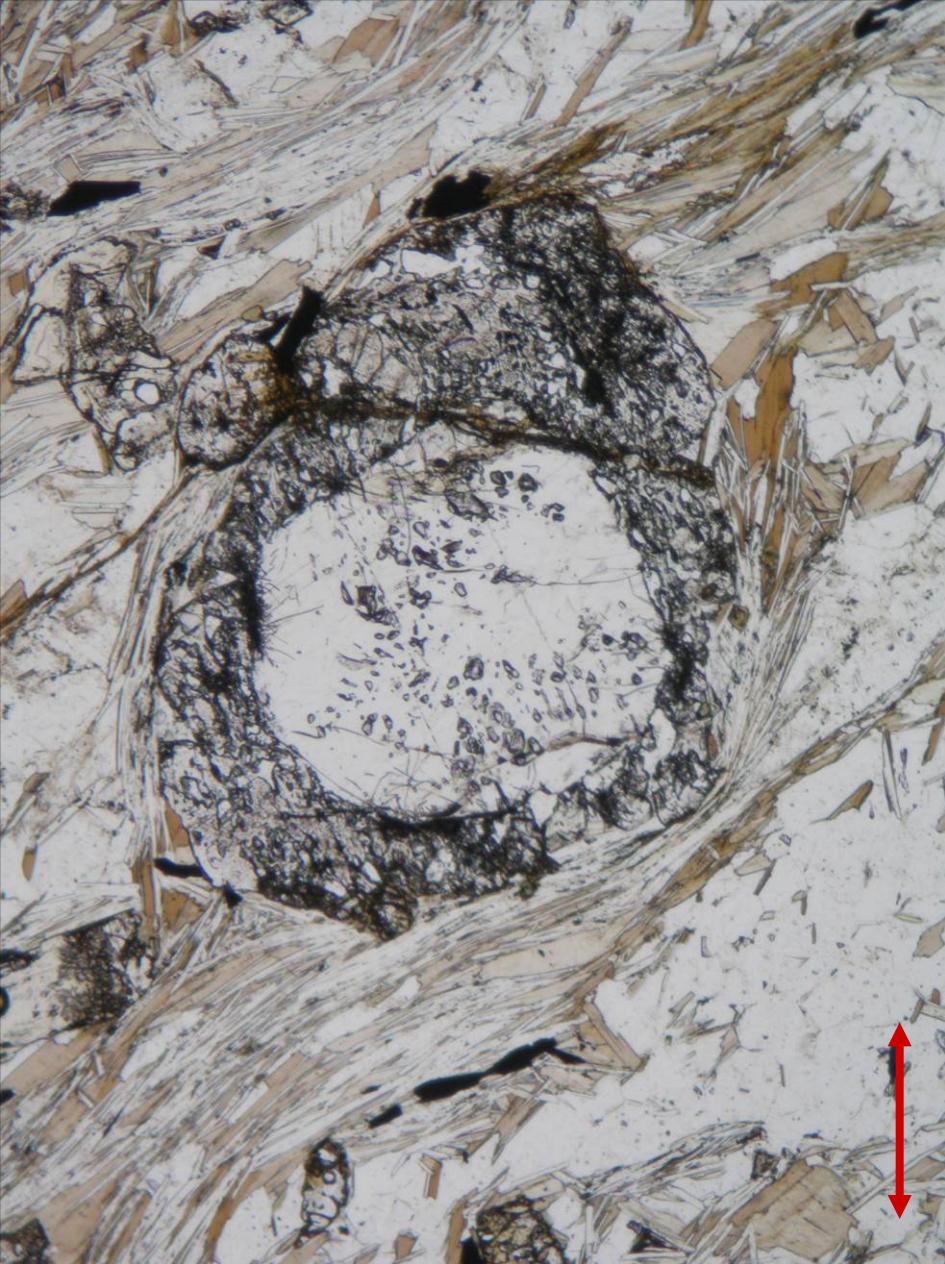
Garnet in mica schist from Ostružná, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





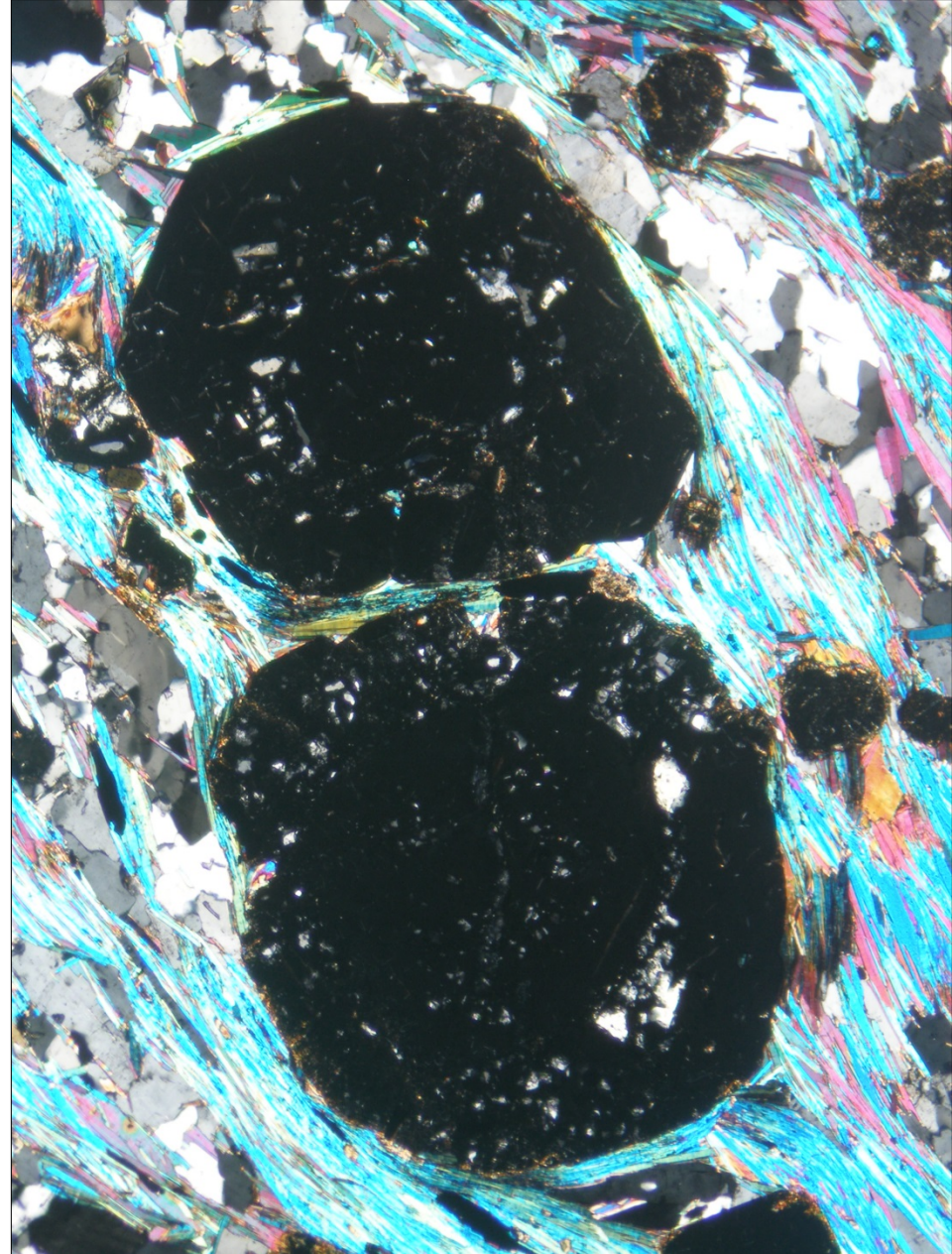
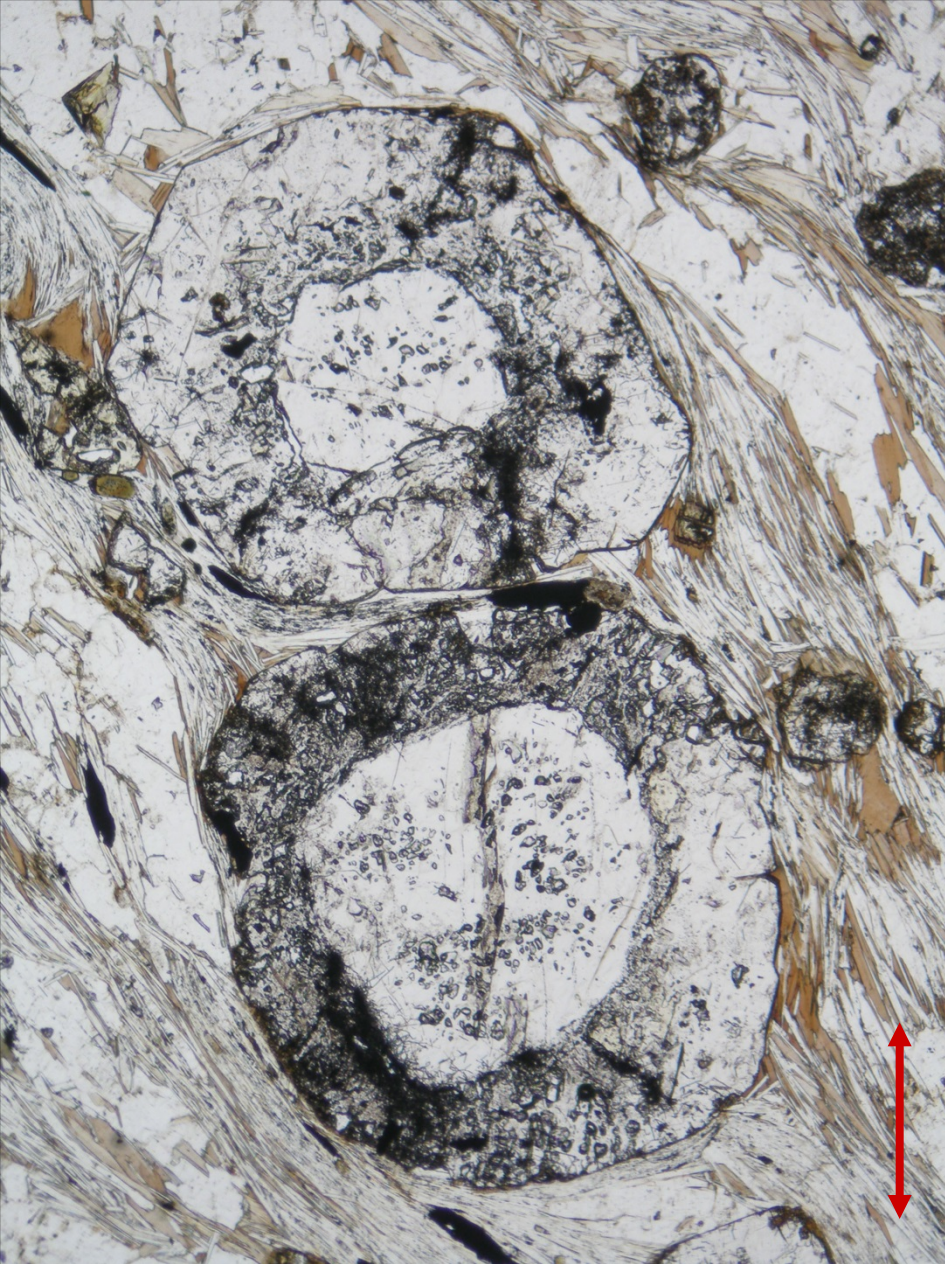
Garnet porphyroblast in mica schist from Hardegg, Austria; PPL (left) and XPL (right). Width of fields of view is ca. 2.0 mm. Photo: JiZi.





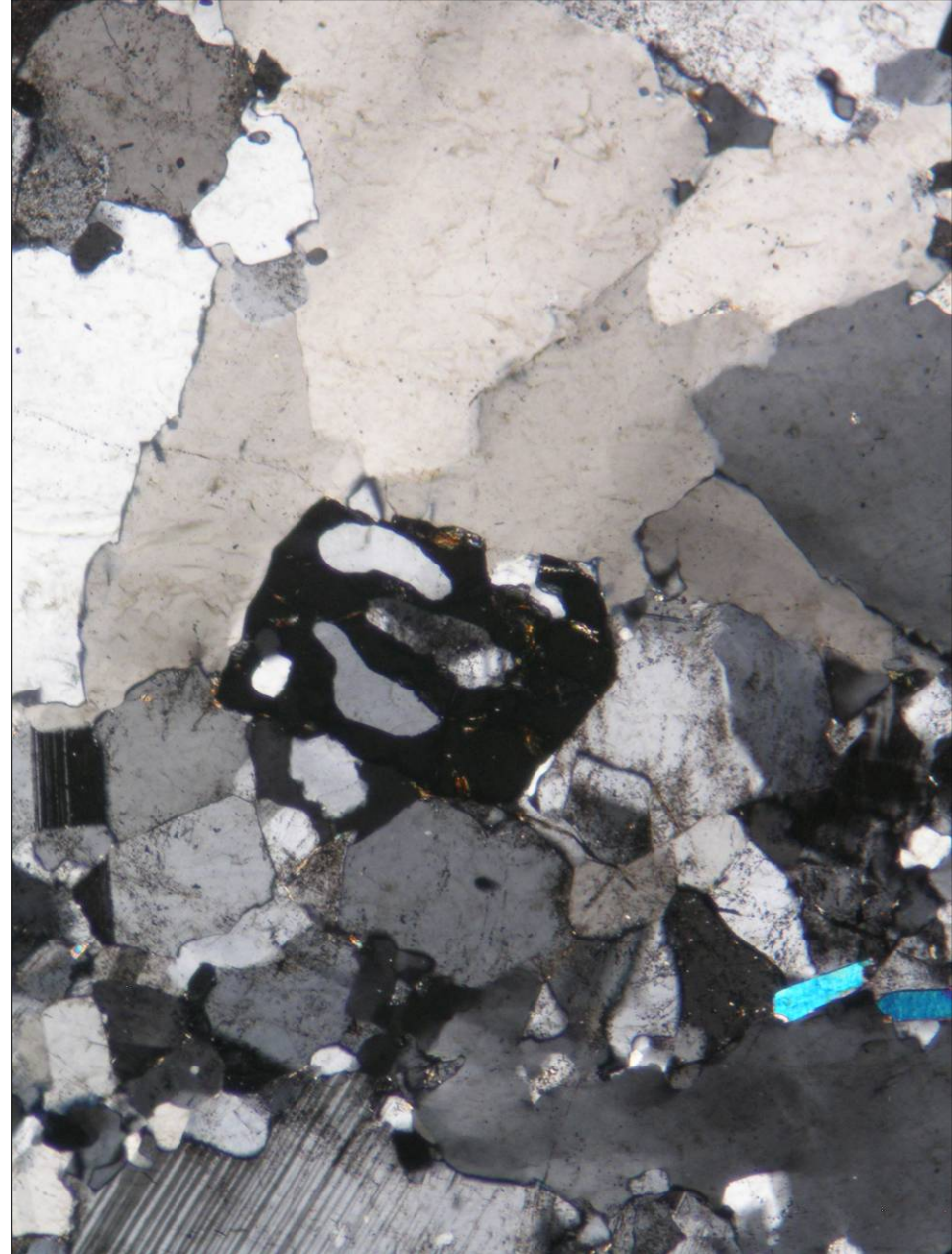
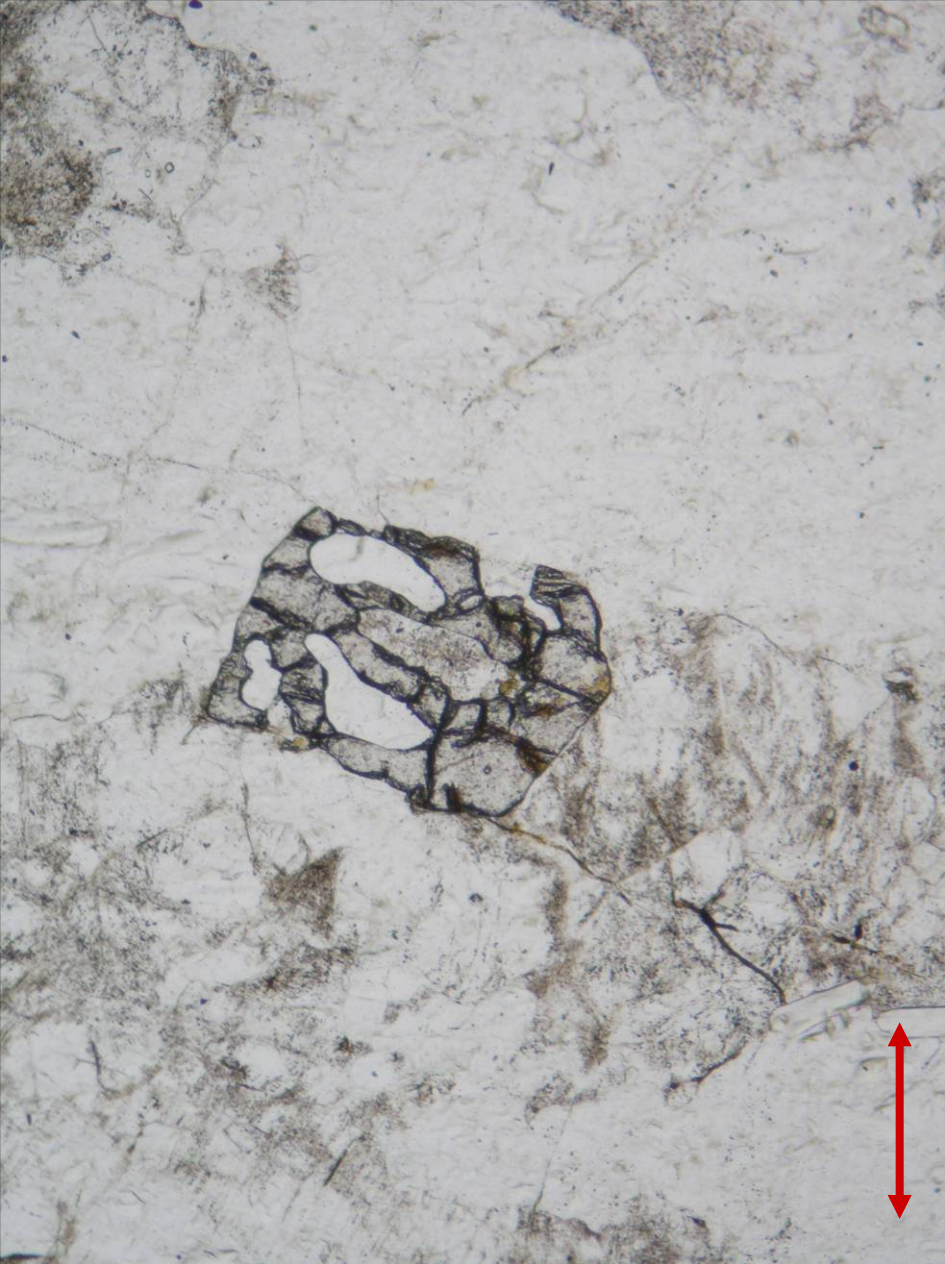
Garnet porphyroblast in mica schist from Hardegg, Austria; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





Garnet porphyroblasts in mica schist from Hardegg, Austria; PPL (left) and XPL (right). Width of fields of view is ca. 2.0 mm. Photo: JiZi.





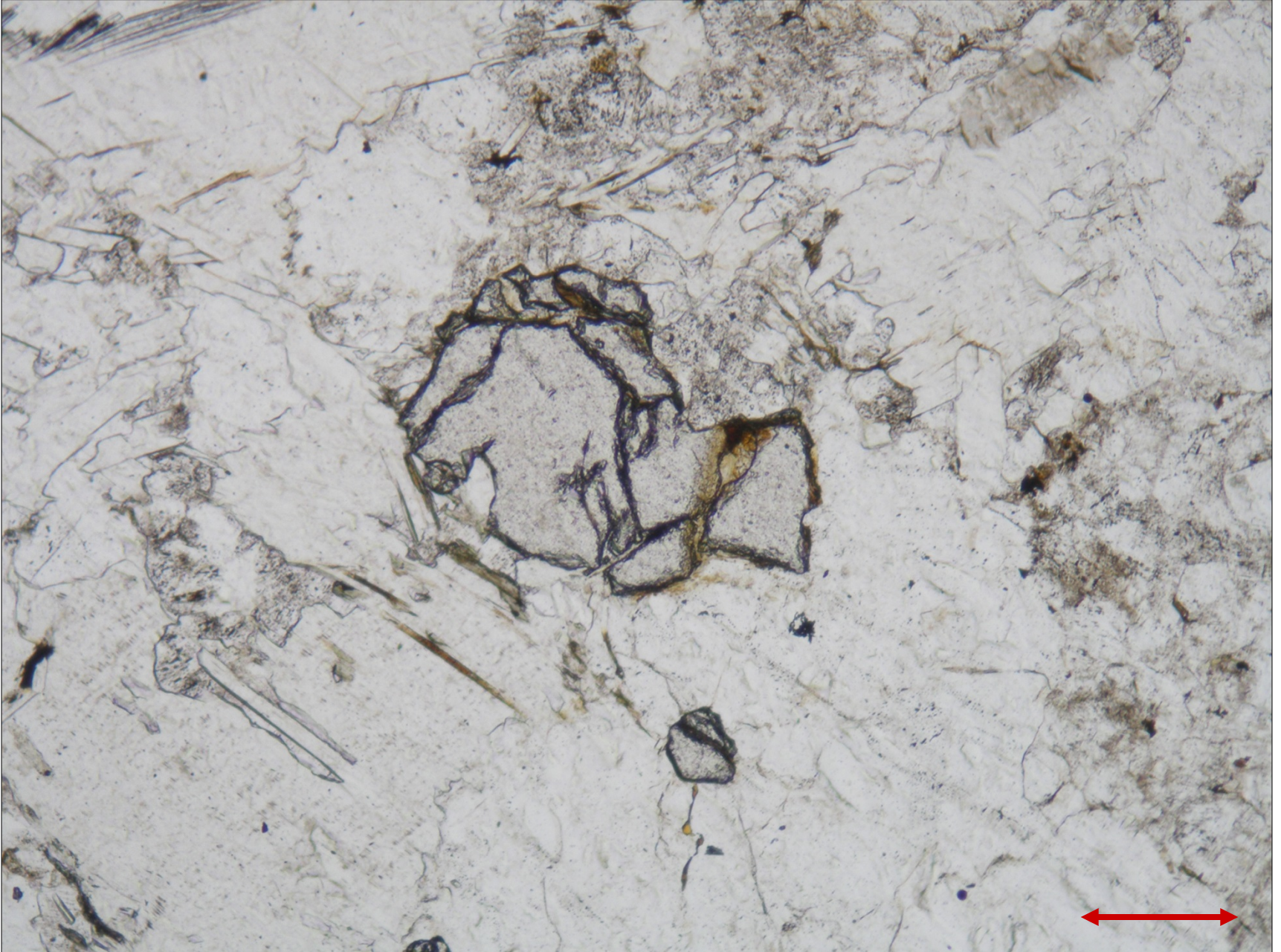
Garnet in migmatite from Kaňk near Kutná Hora, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.





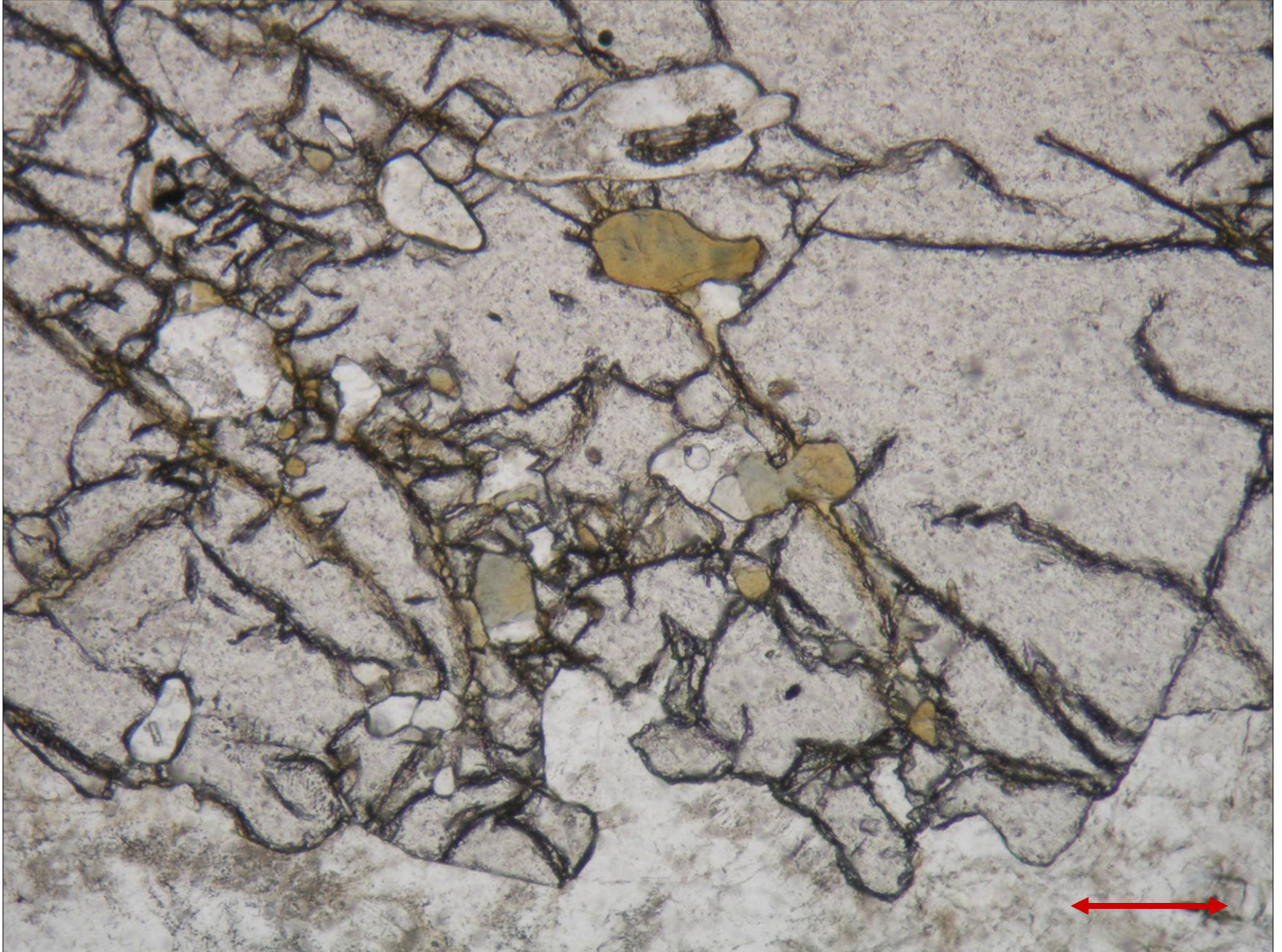
Garnet in migmatite from Kaňk near Kutná Hora, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca.1.8 mm. Photo: JiZi.





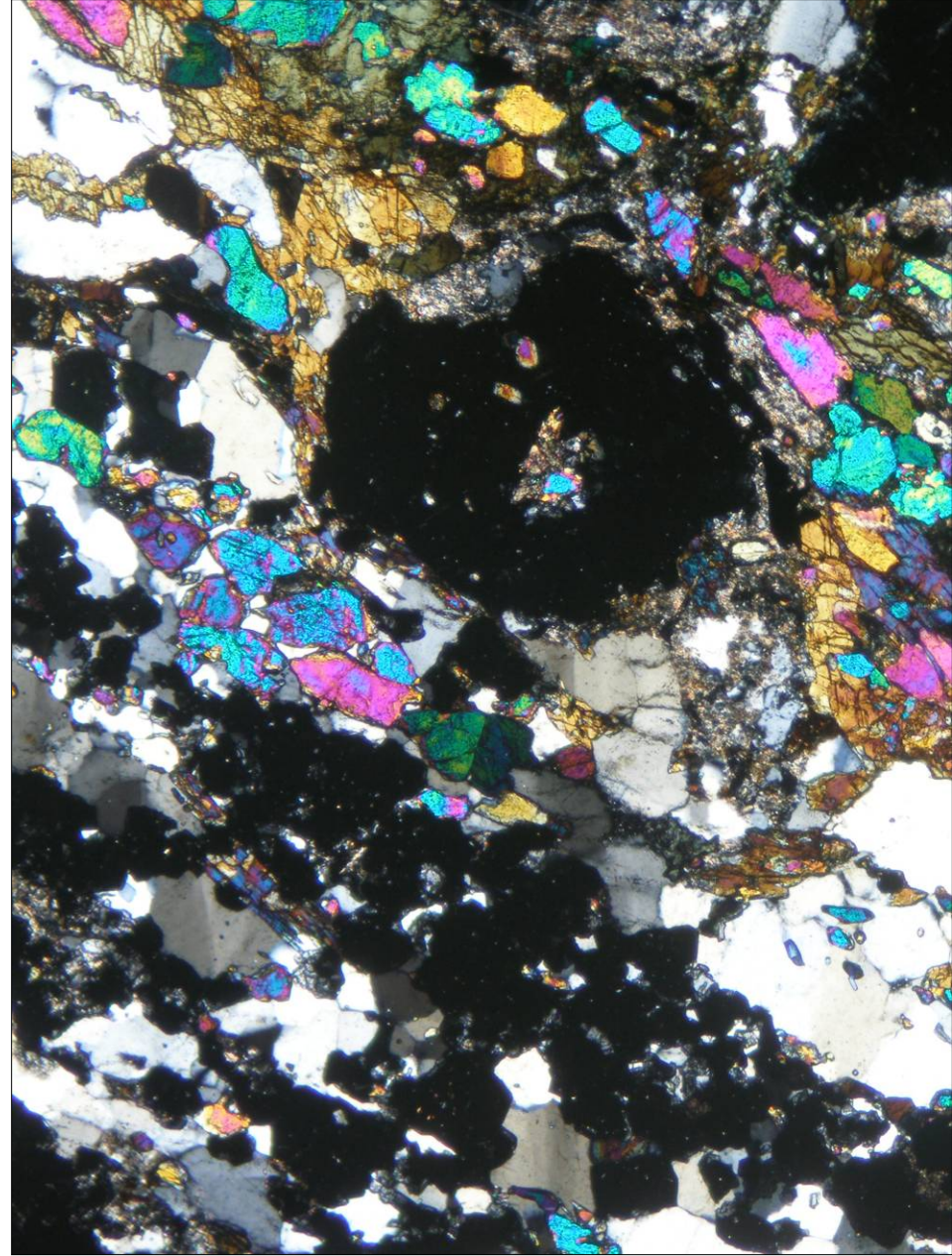
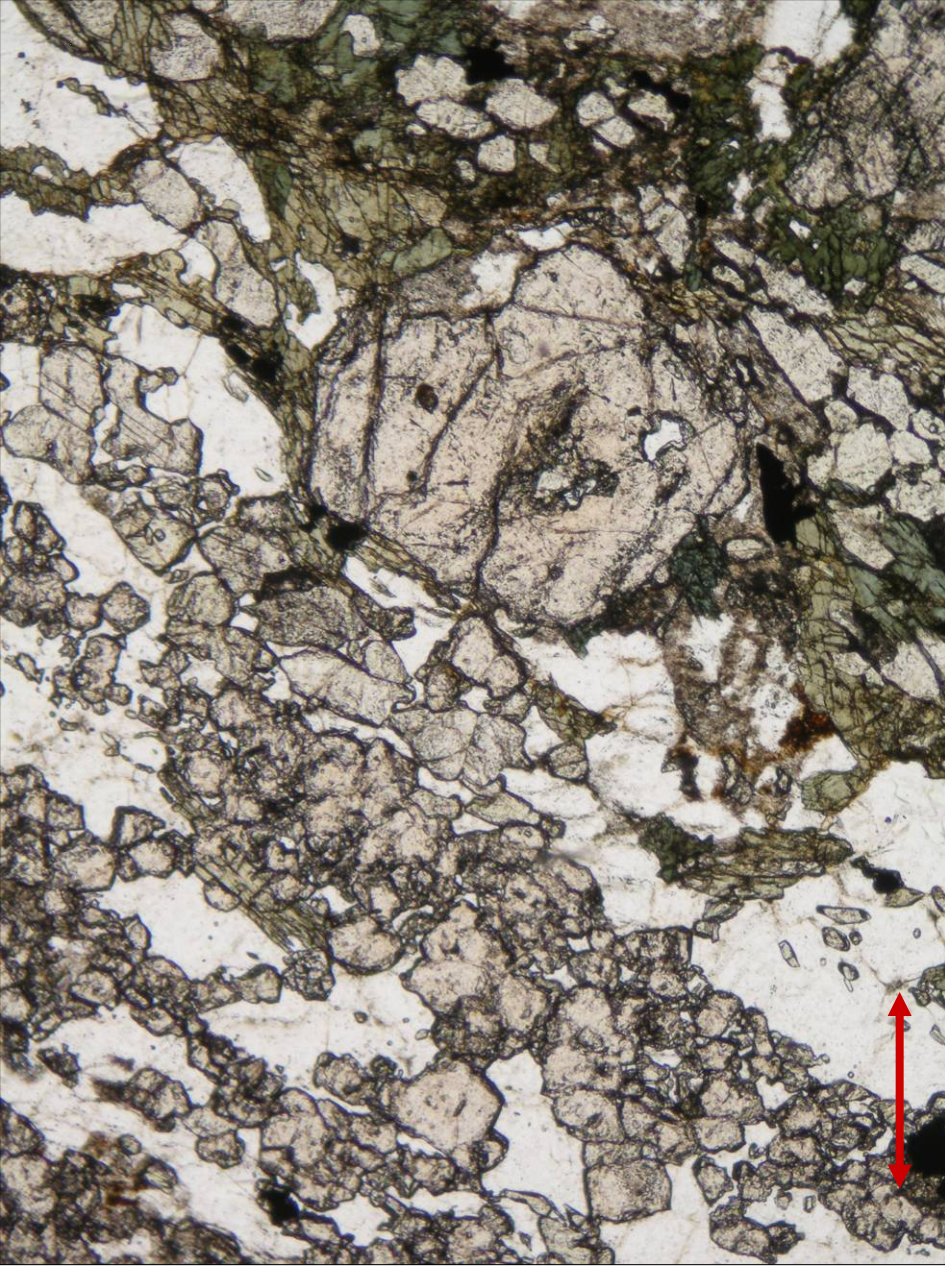
Garnet in migmatite from Kaňk near Kutná Hora, the Czech Republic; PPL. Width of the field of view is ca. 1.8 mm. Photo: JiZi.





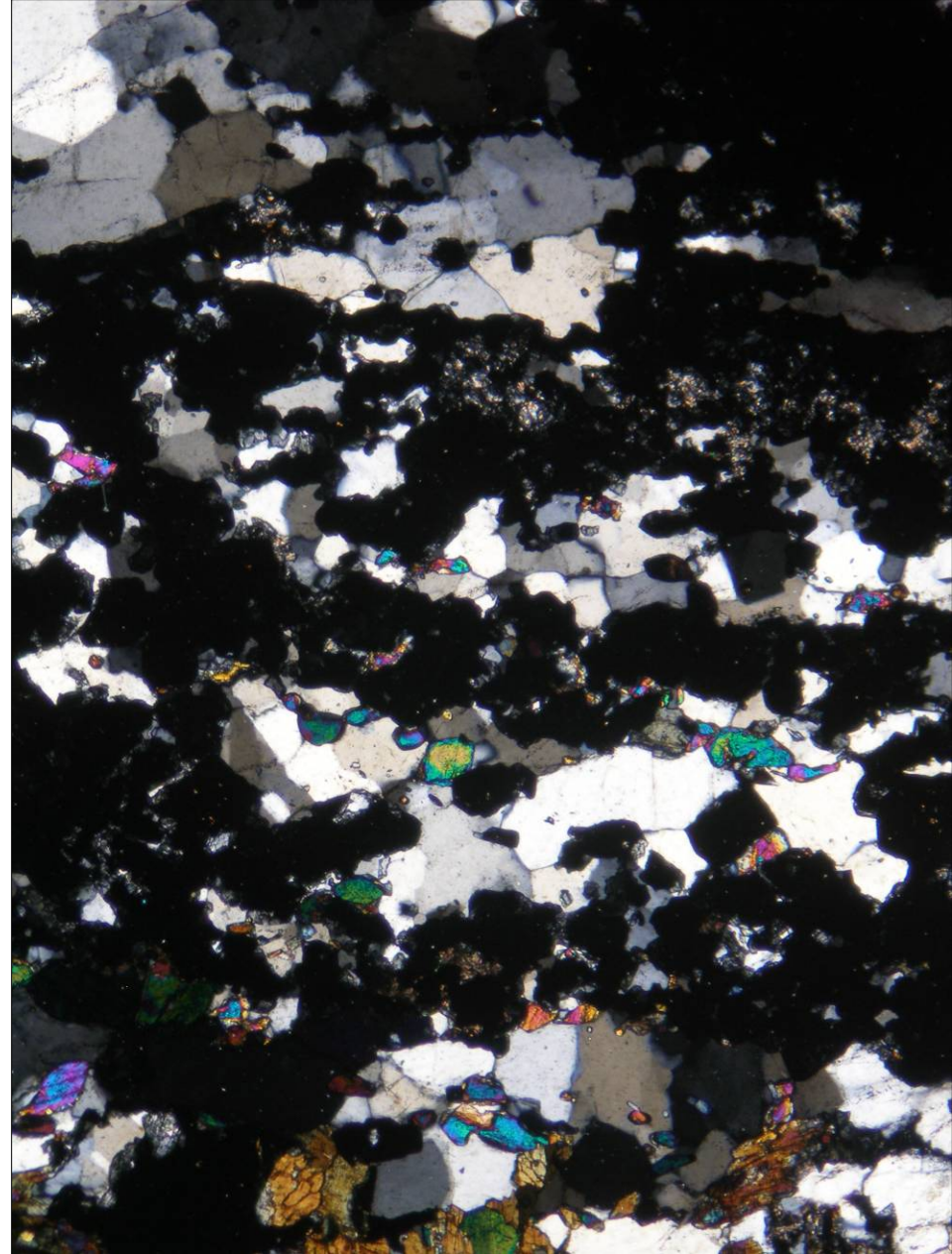
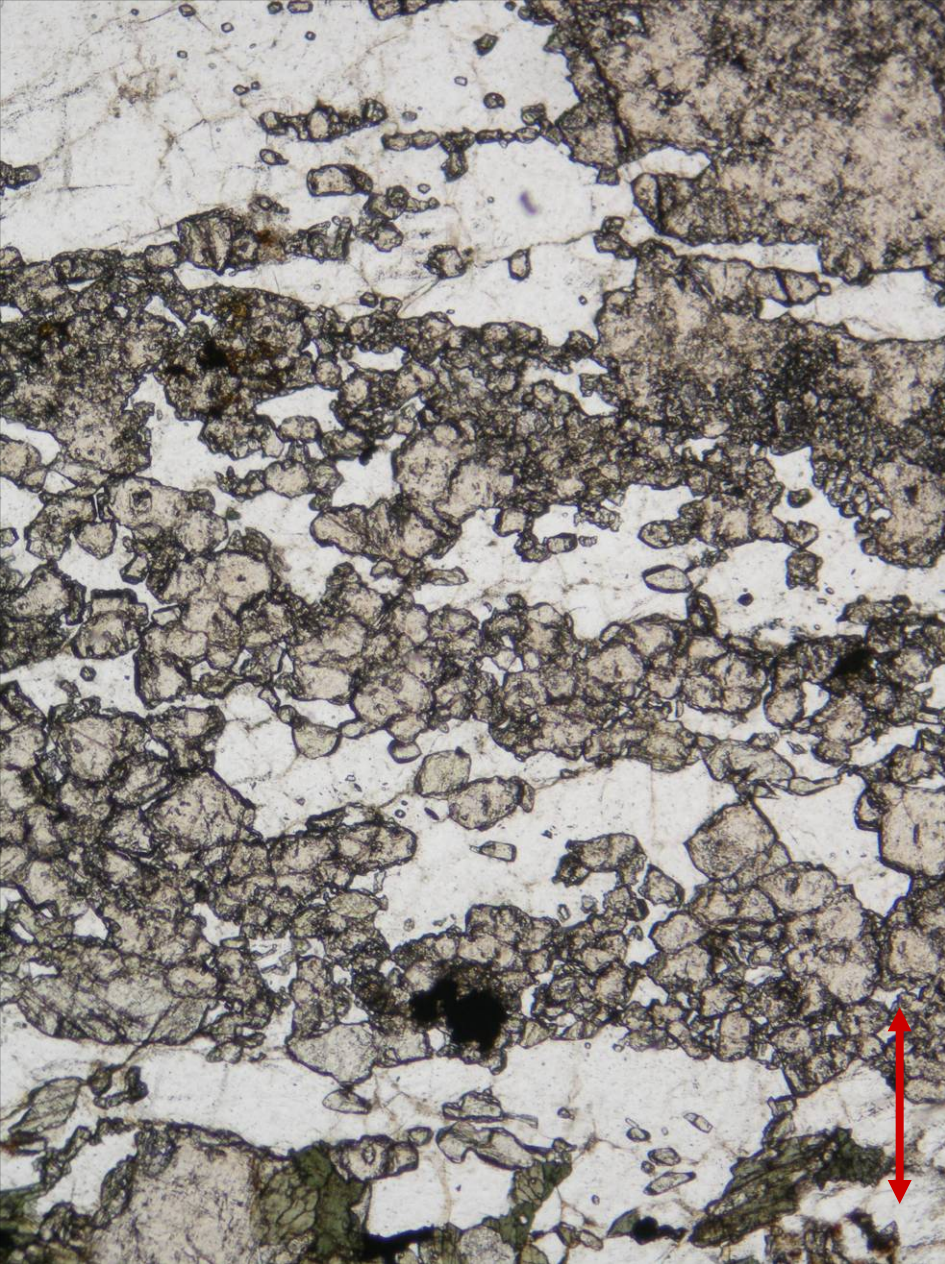
Garnet with schorl inclusions in migmatite from Kaňk near Kutná Hora, the Czech Republic; PPL. Field of view is ca. 2.8 mm wide. Photo: JiZi.





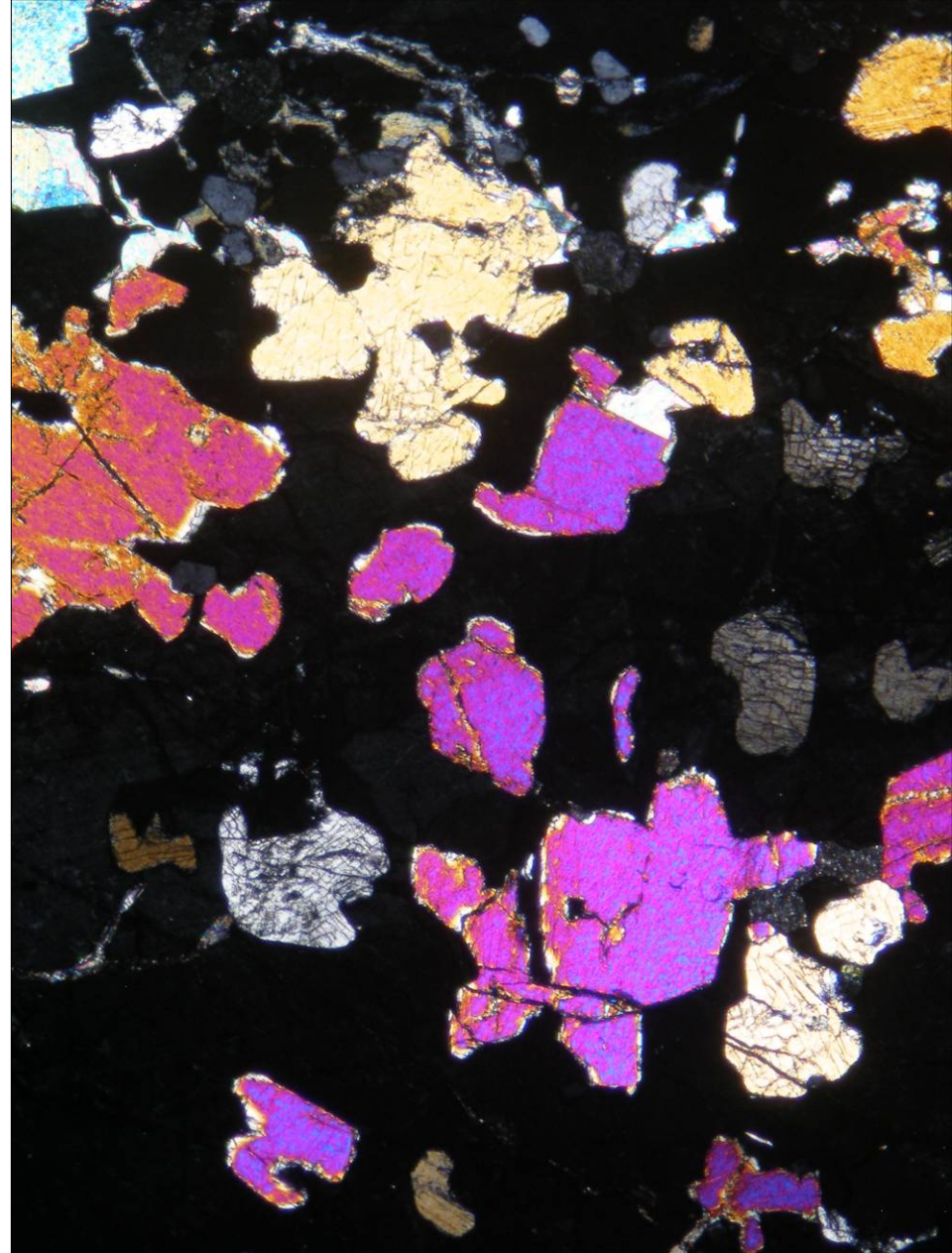
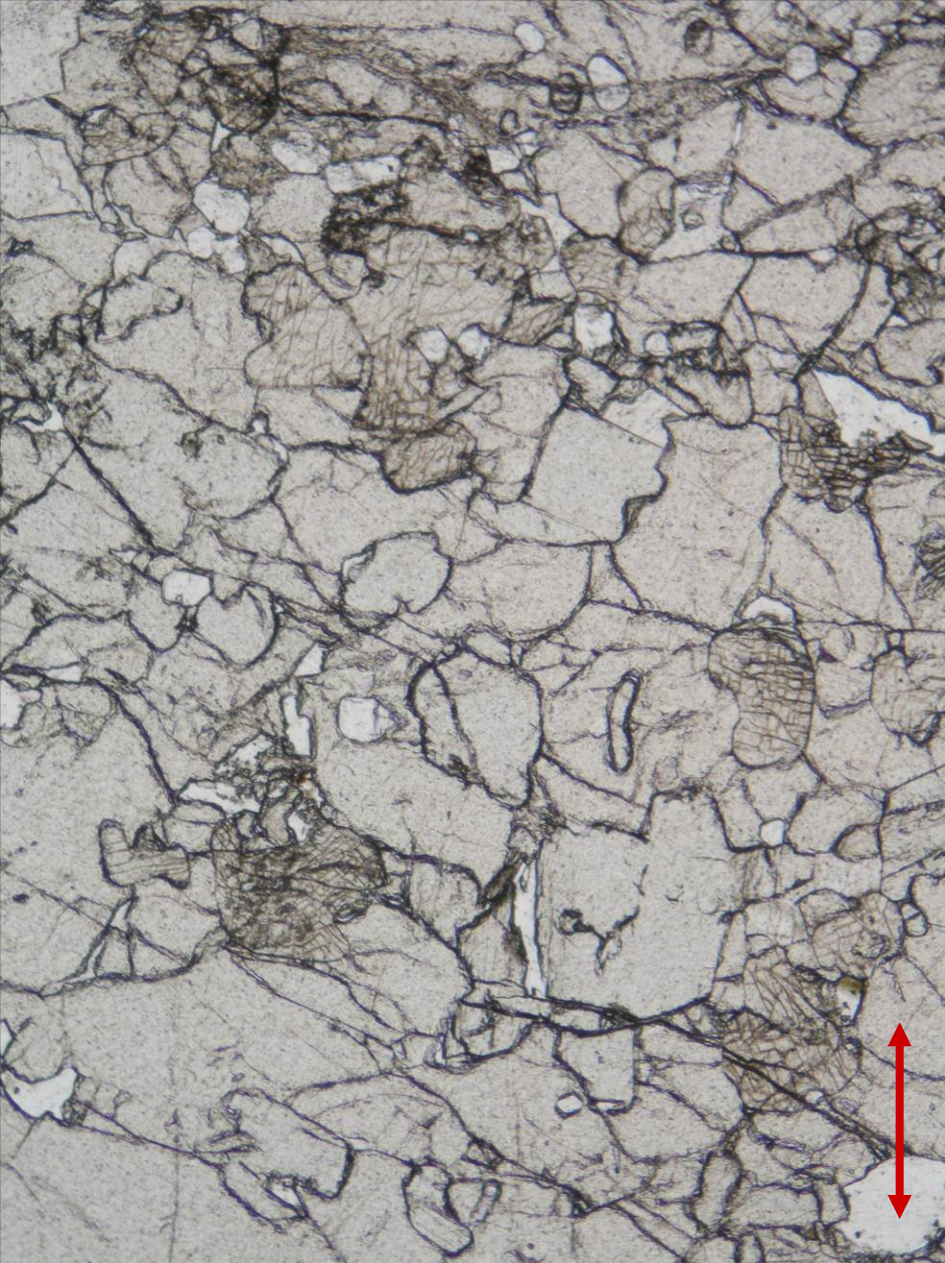
Garnet porphyroblast and a garnet-rich band in hornblende gneiss from Sobotín, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





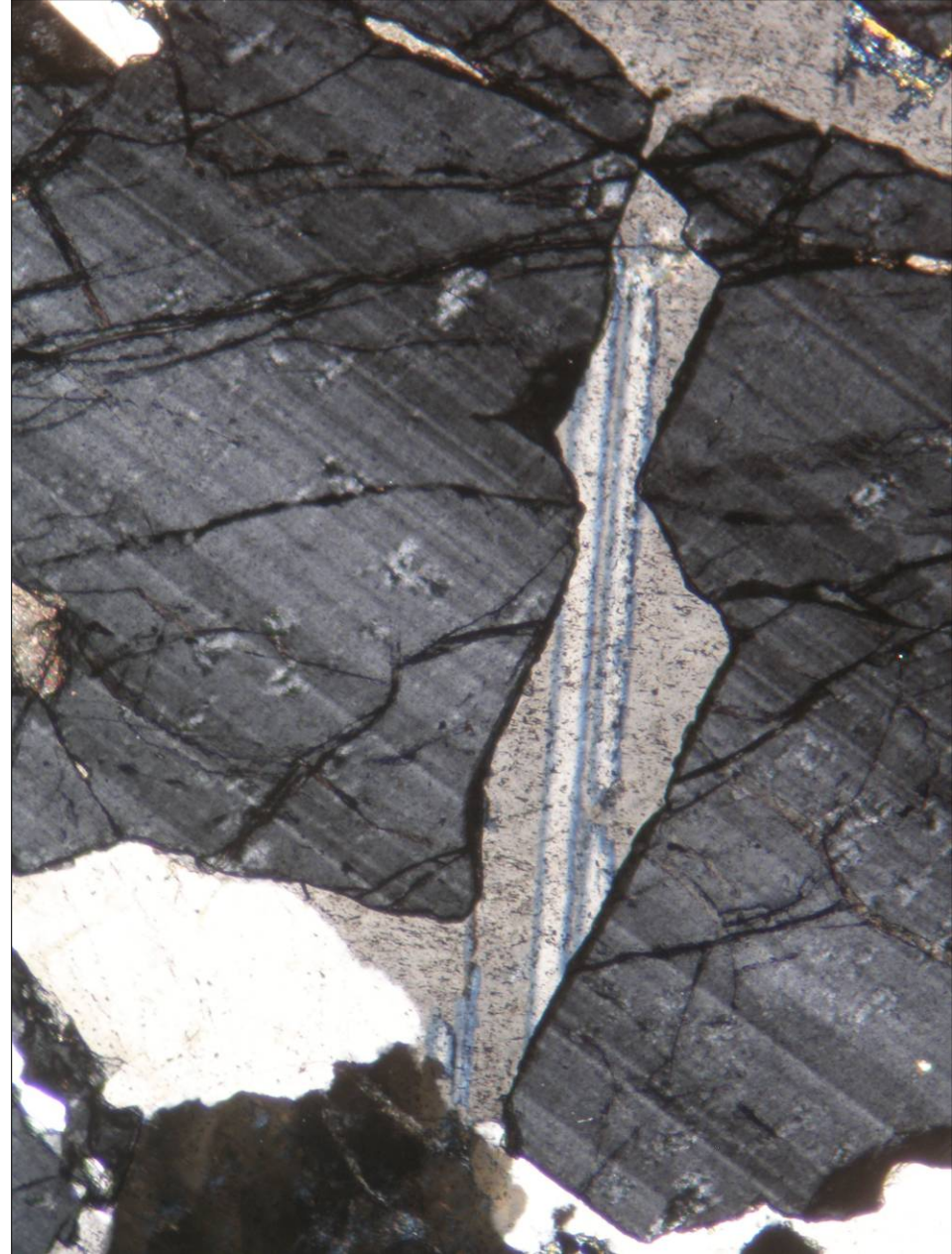
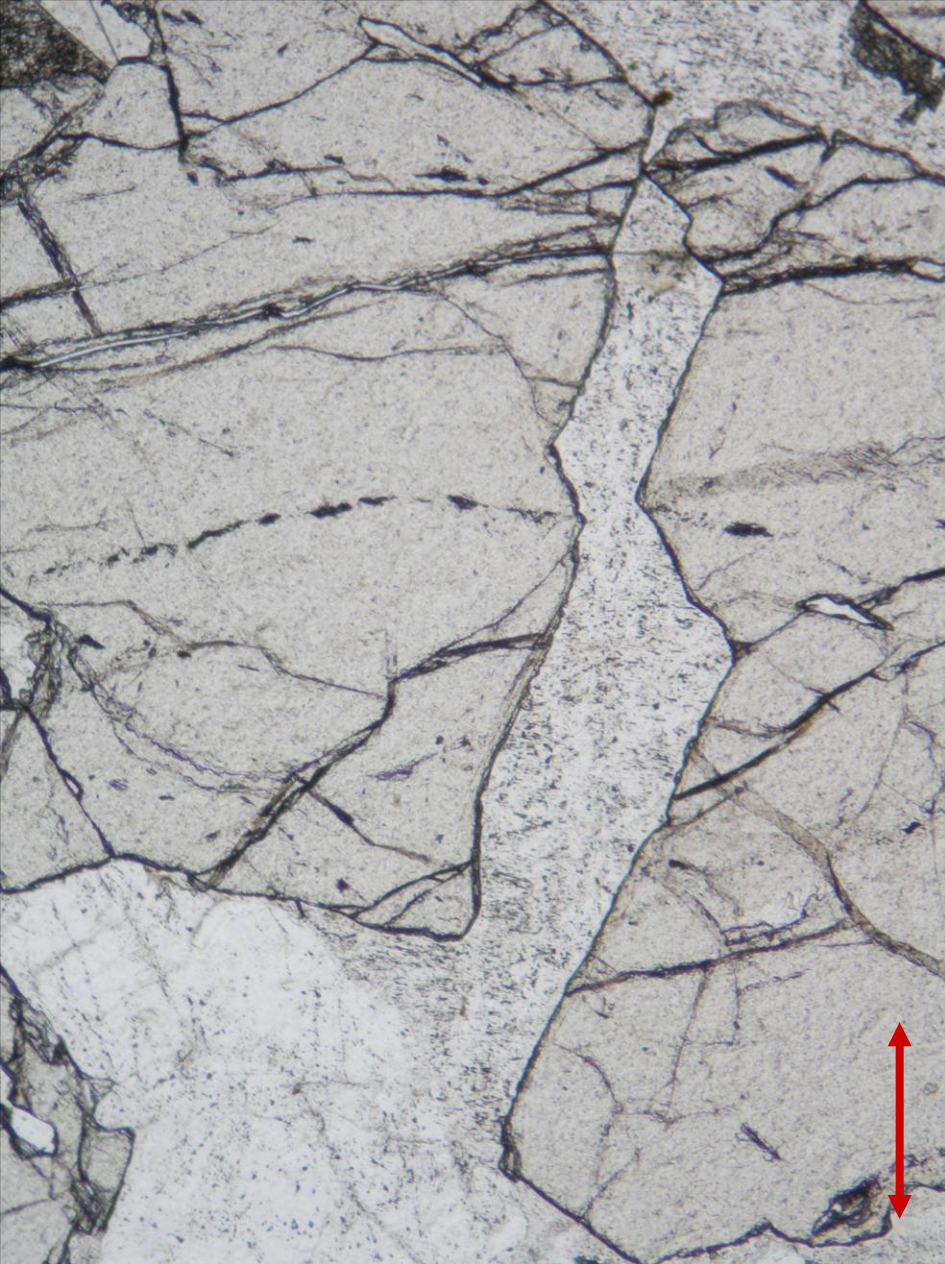
Garnet and quartz in metamanganolite from Sobotín, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.8 mm. Photo: JiZi.





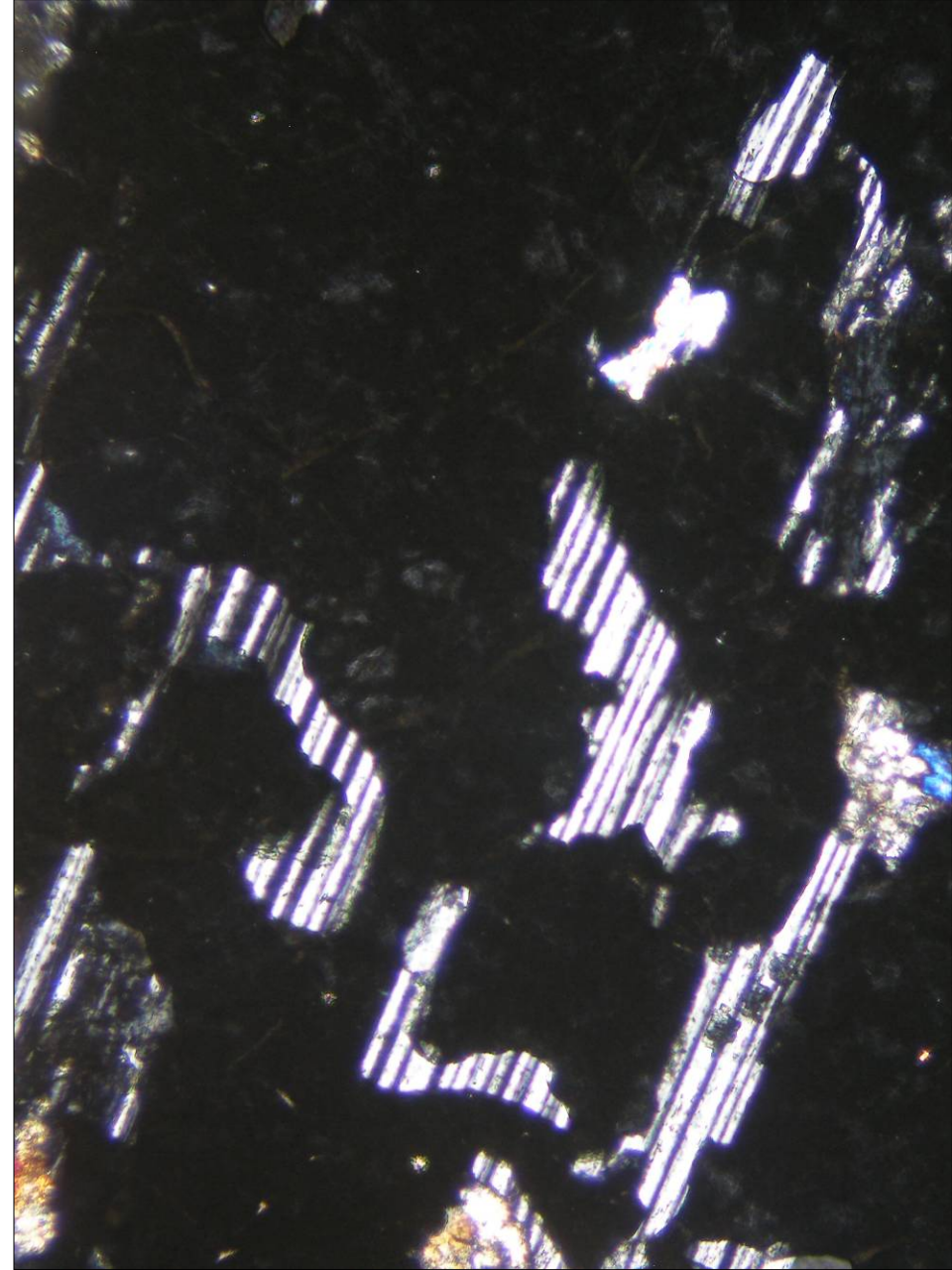
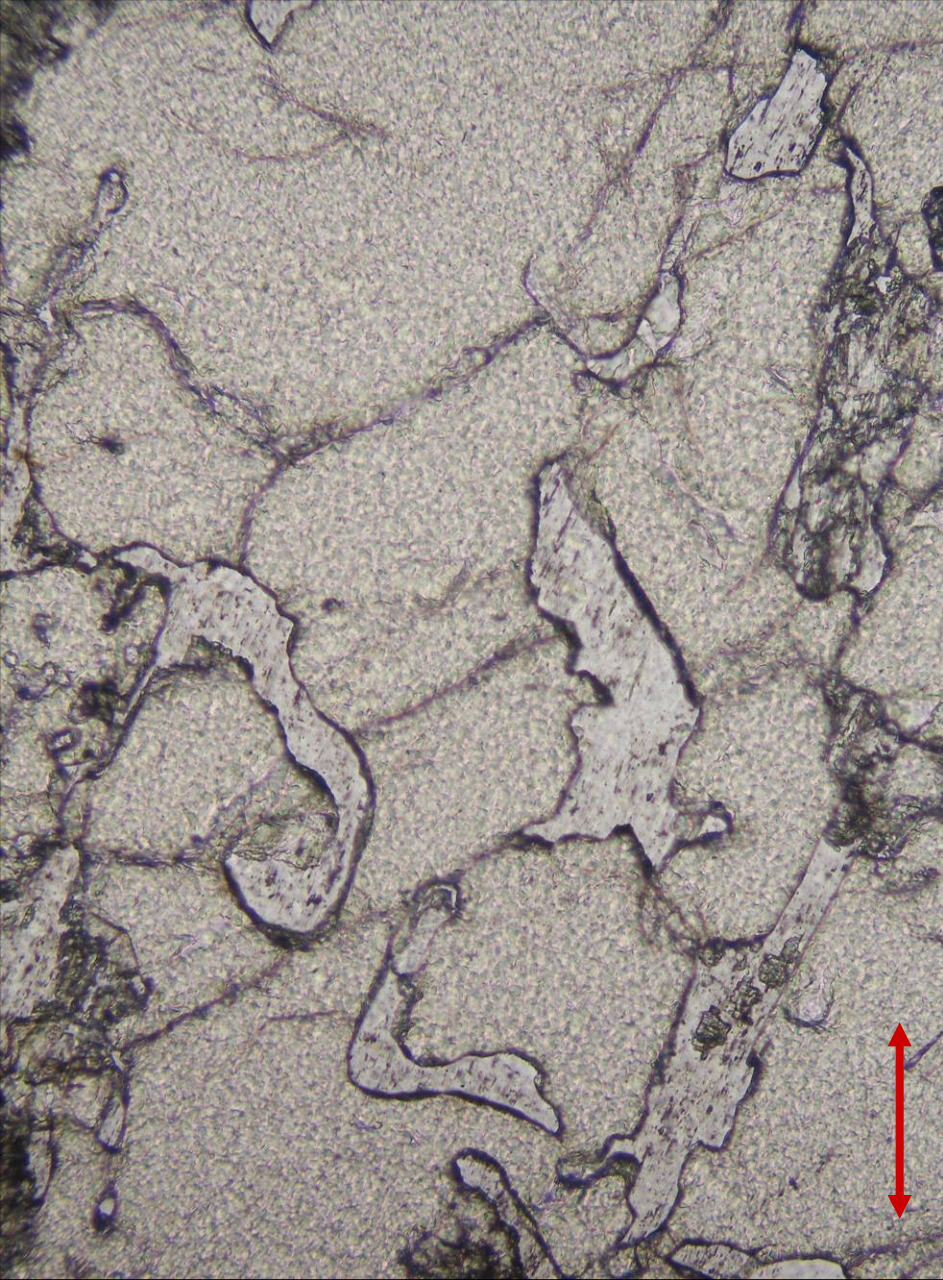
Garnet and diopside in contact skarn from Žulová, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.





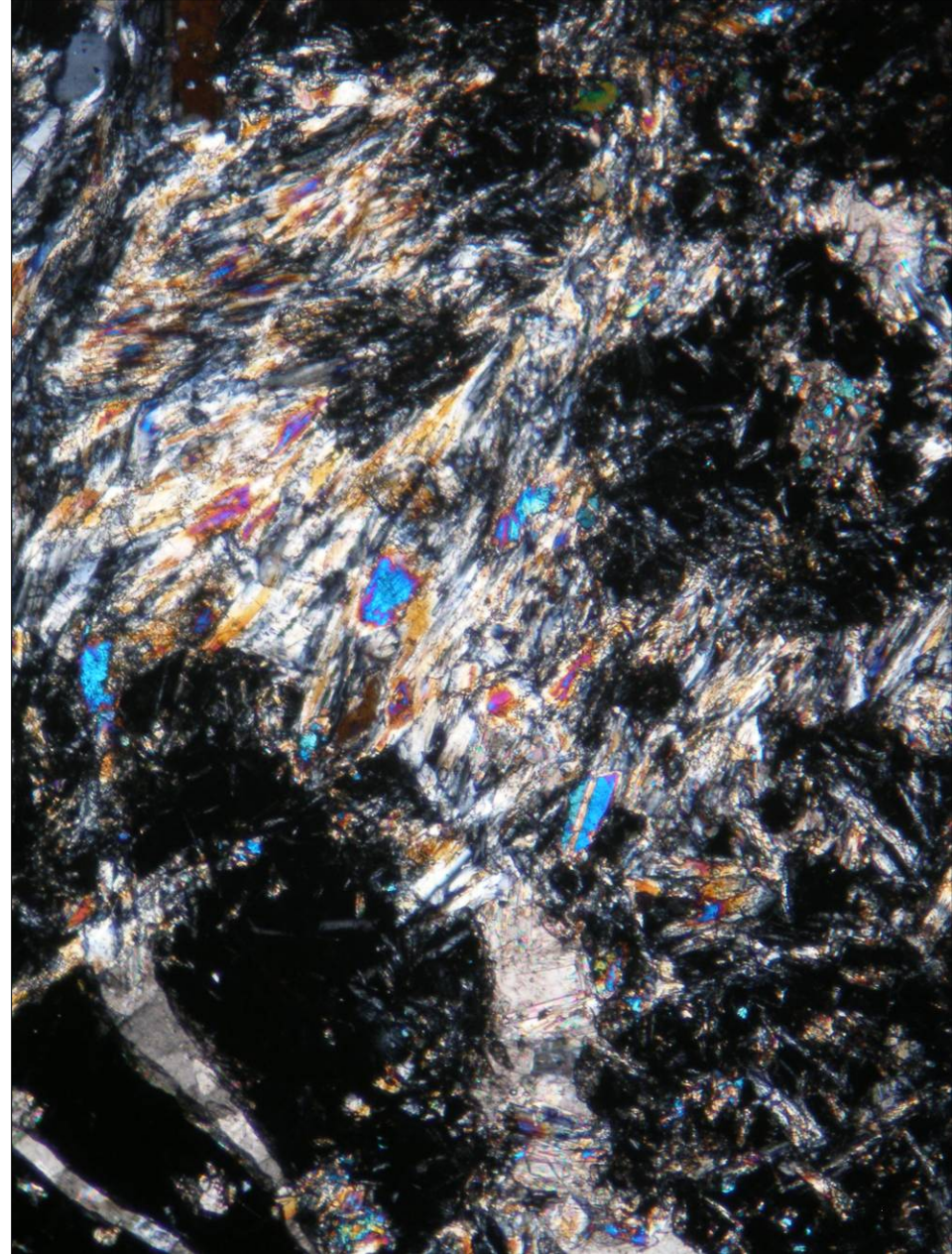
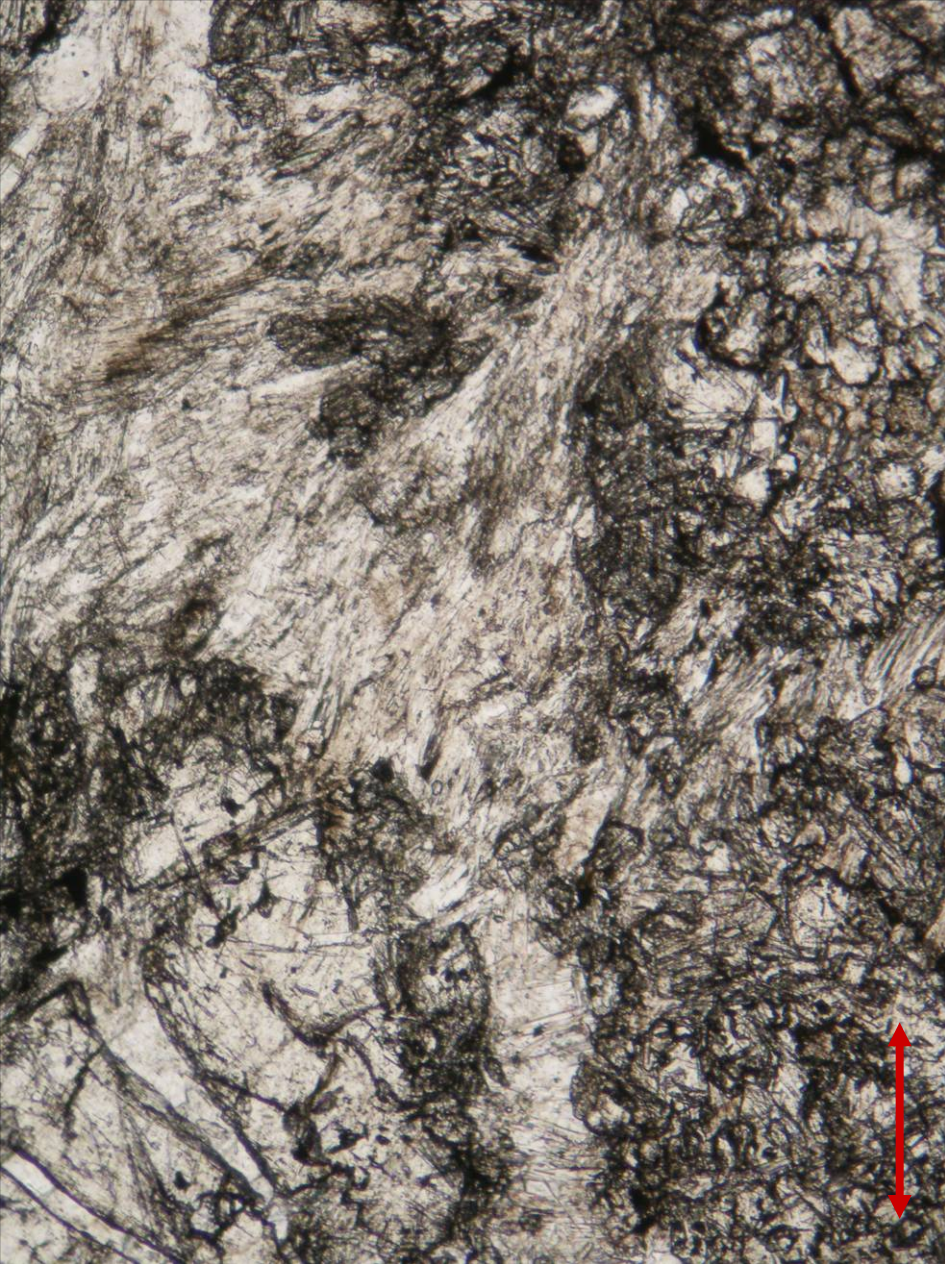
Garnet (anomalously birefringent grossular) and plagioclase in contact skarn from Žulová, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.





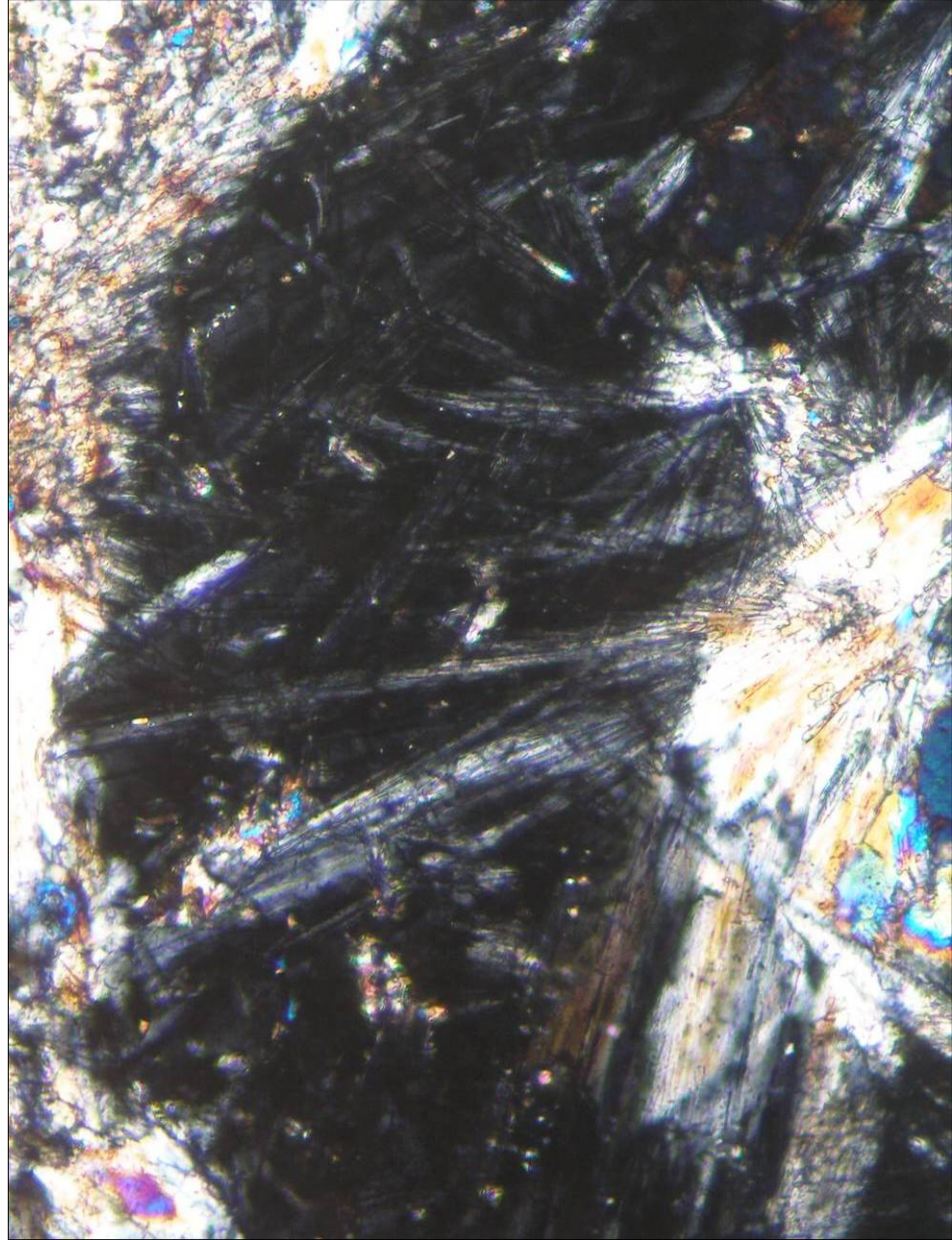
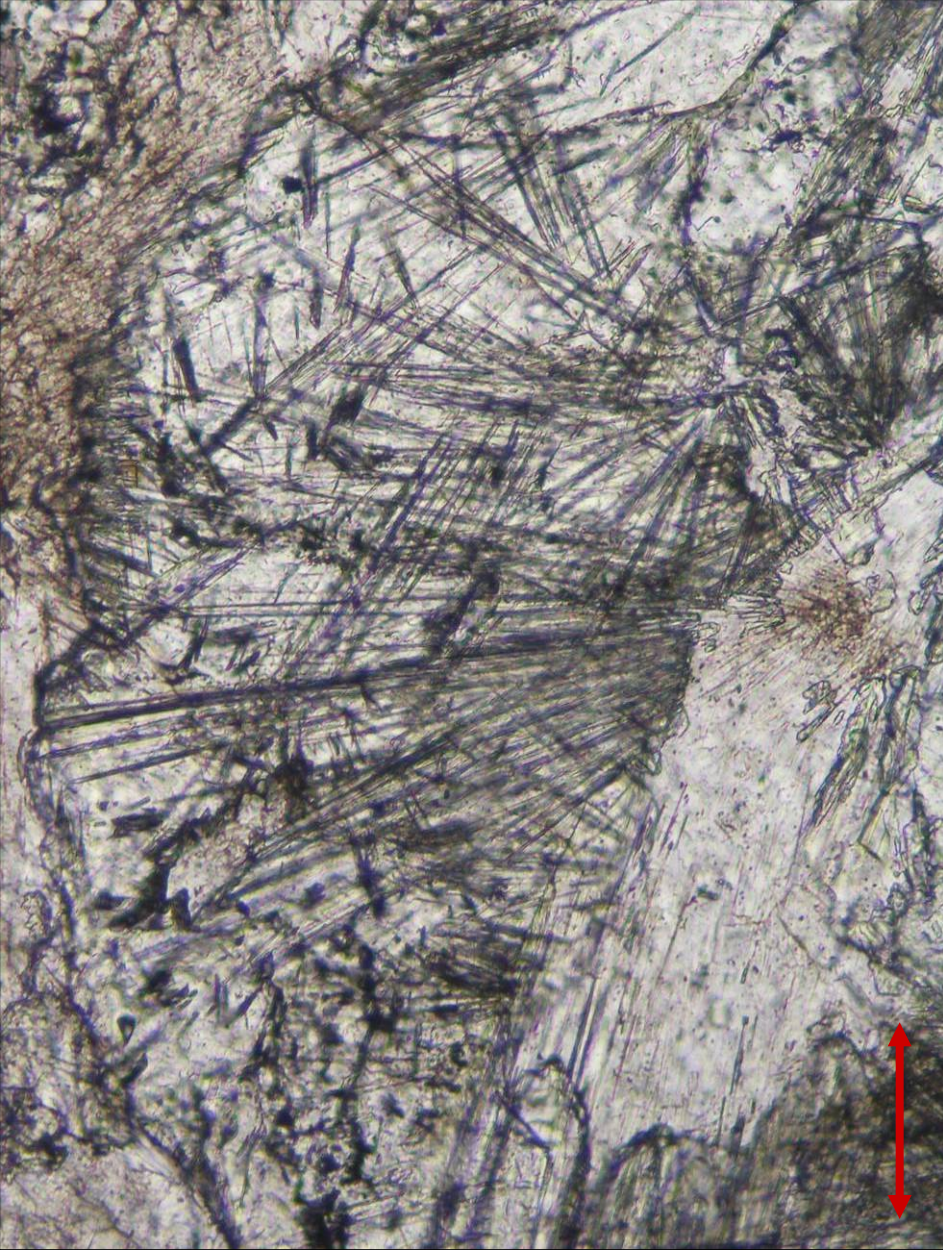
Garnet and plagioclase in contact skarn from Žulová, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.5 mm. Photo: JiZi.





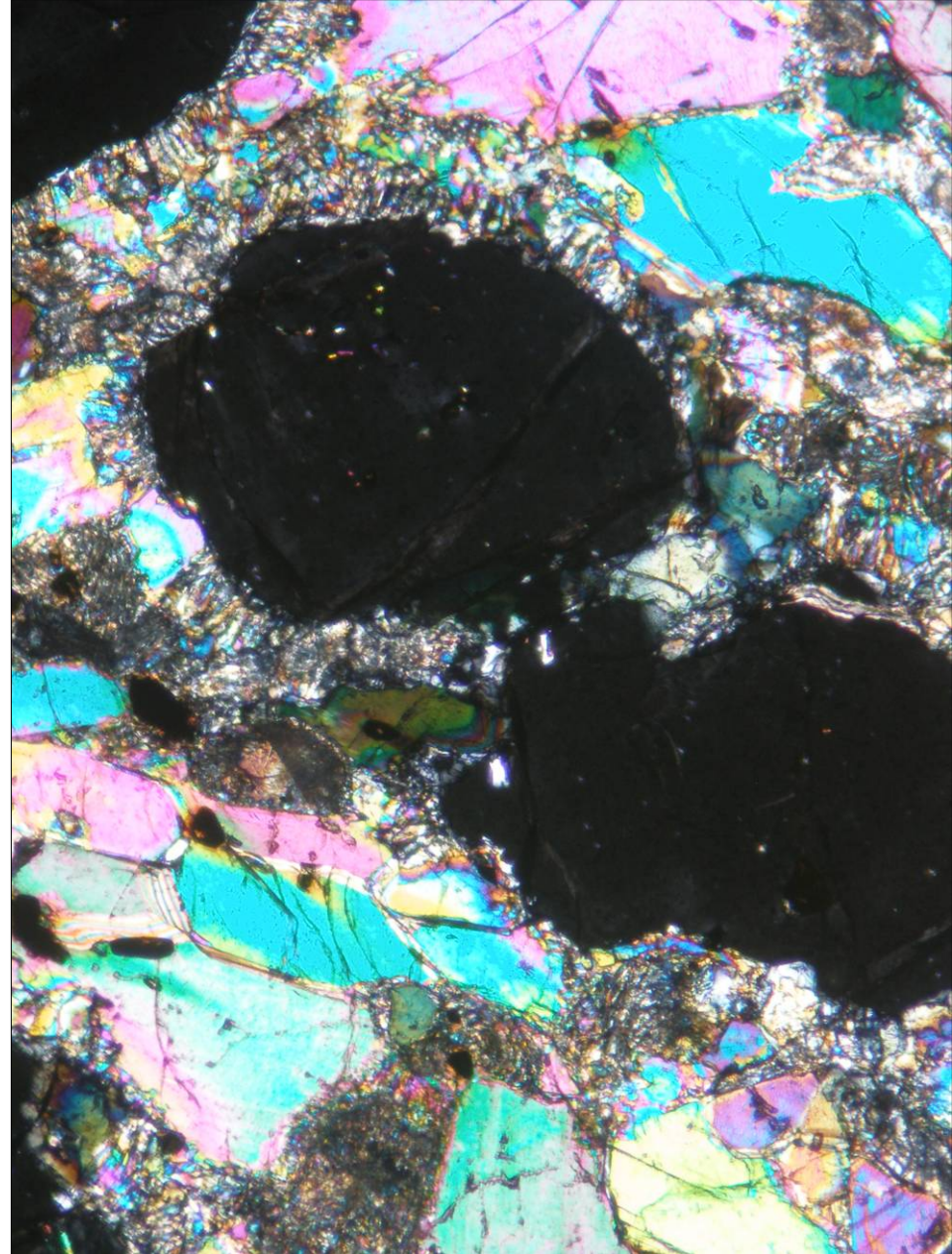
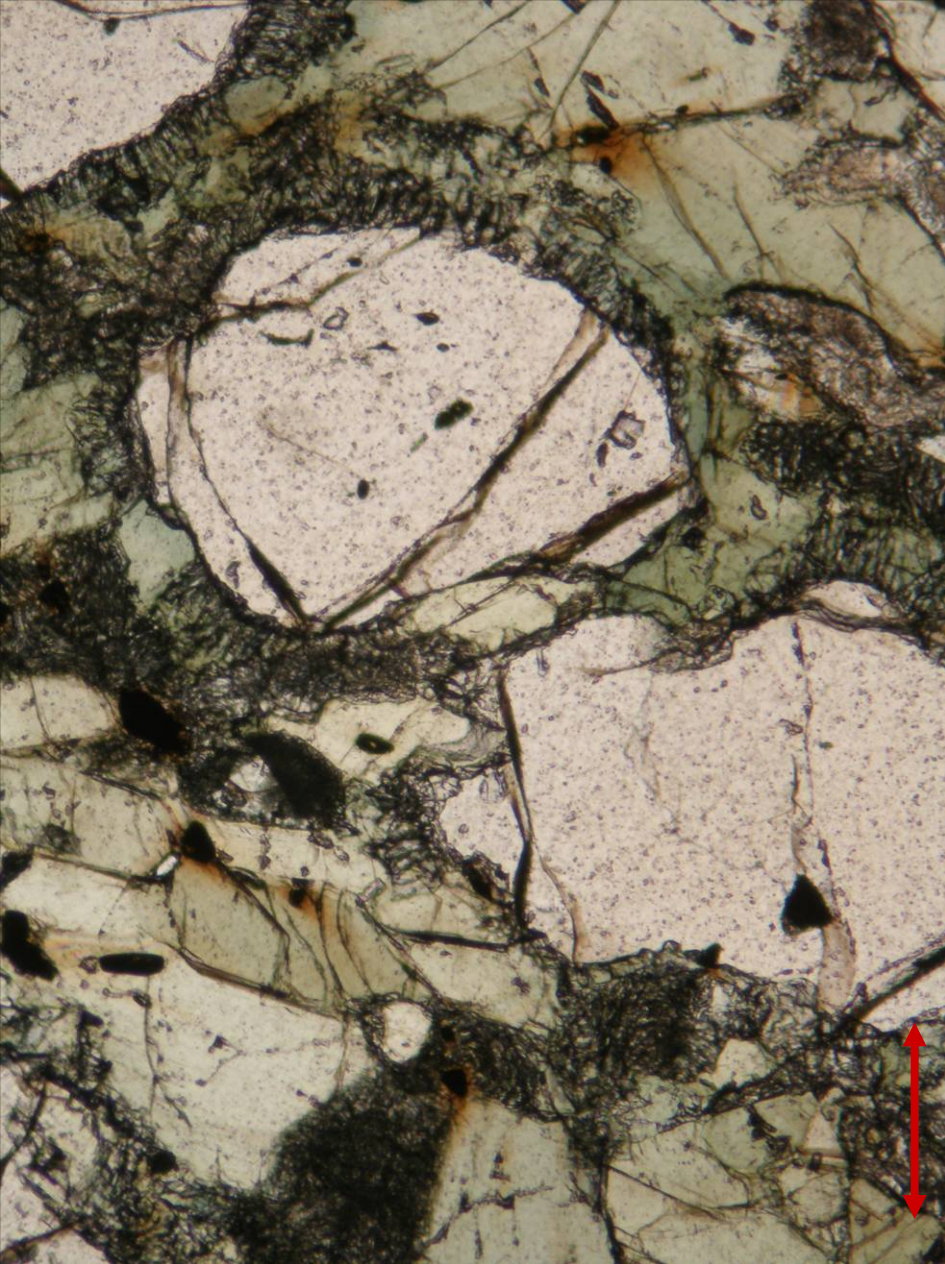
Garnet and wollastonite in calc-silicate rock from Bludov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.





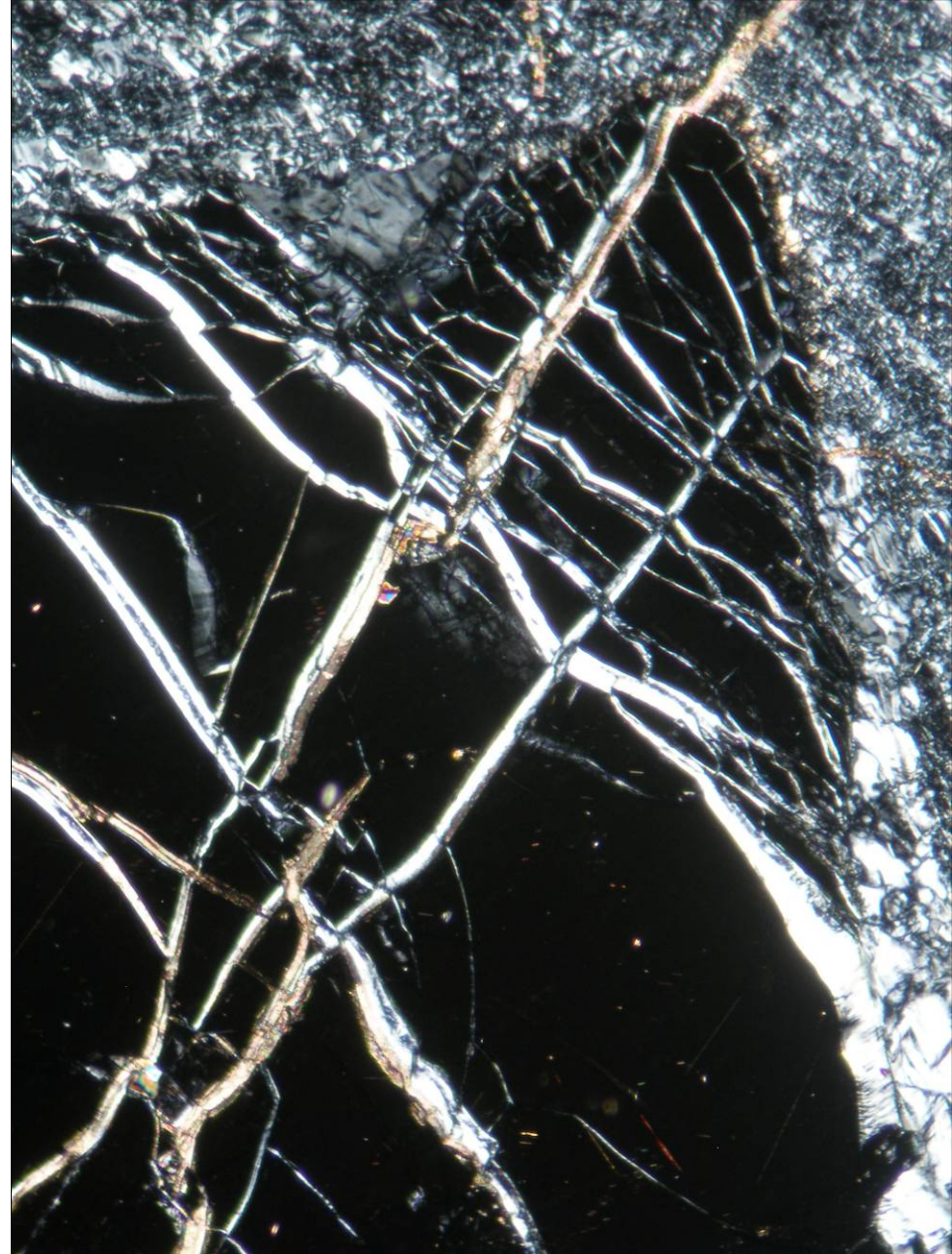
Garnet with wollastonite needles in calc-silicate rock from Bludov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.5 mm. Photo: JiZi.





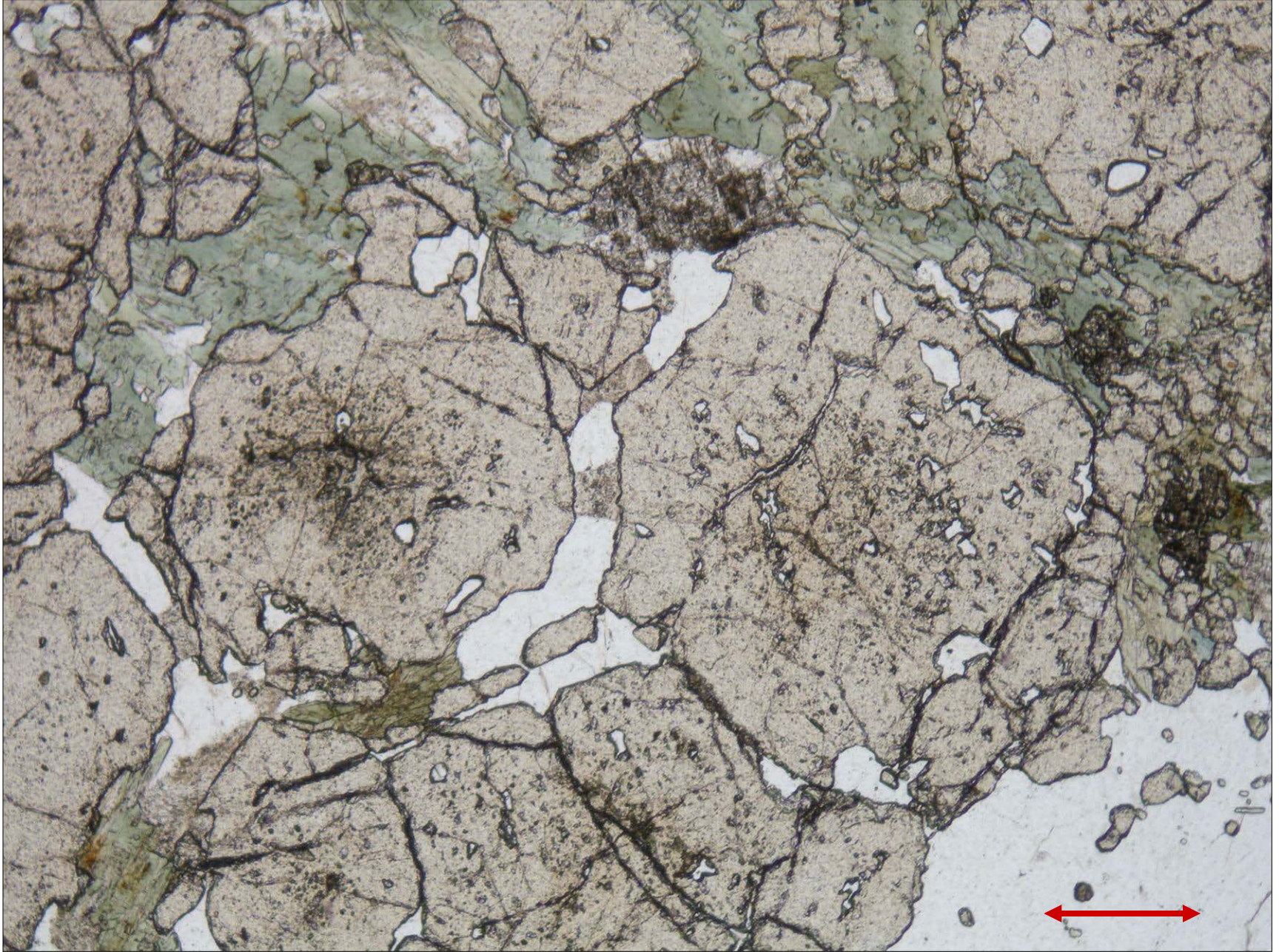
Garnet in eclogite from Borek, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.0 mm. Photo: JiZi.





Garnet in serpentinite from Sedlov, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.5 mm. Photo: JiZi.





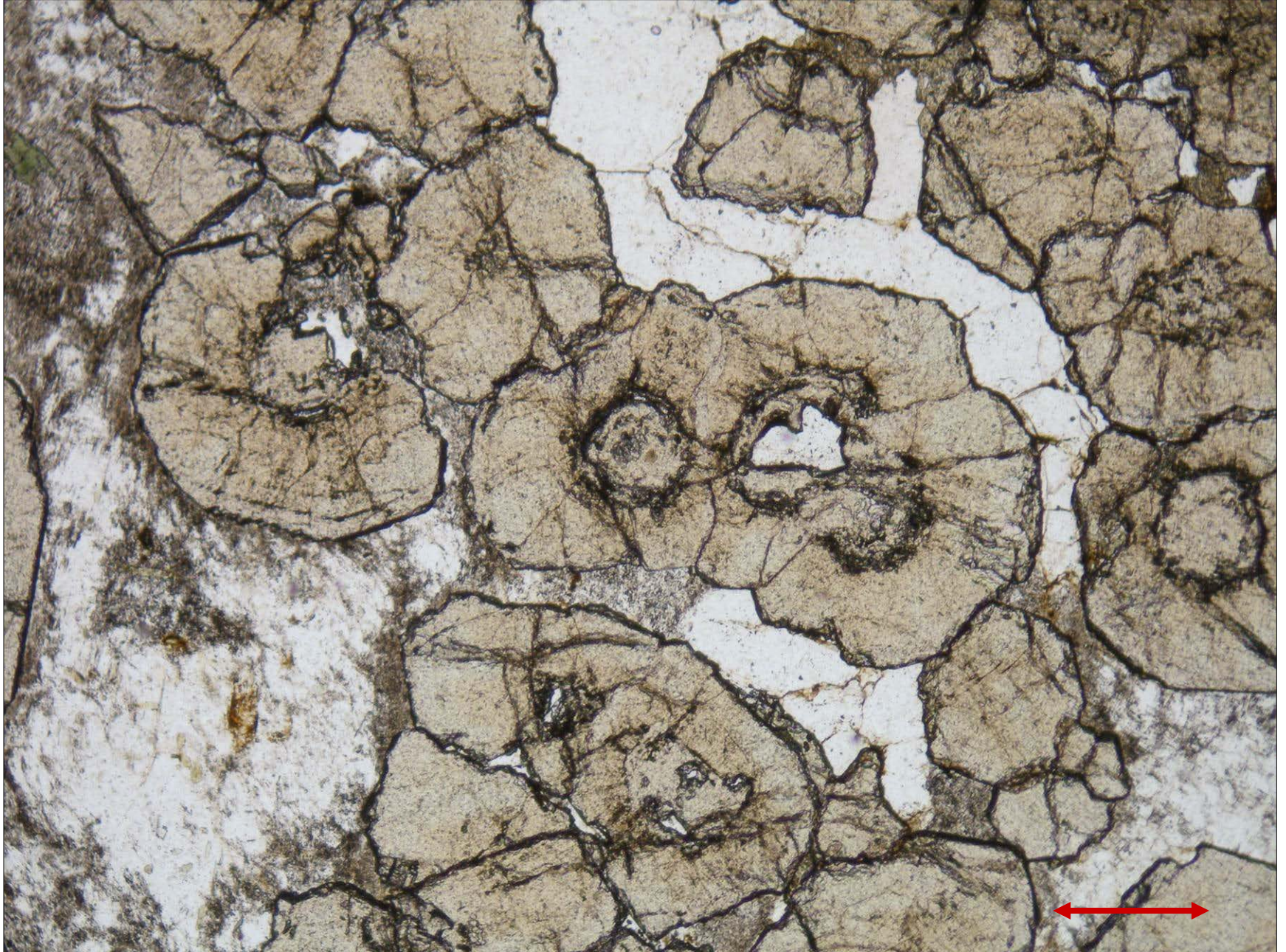
Garnet in metamanganolite from Vernířovice, the Czech Republic; PPL. Field of view is ca. 2.2 mm wide. Photo: JiZi.





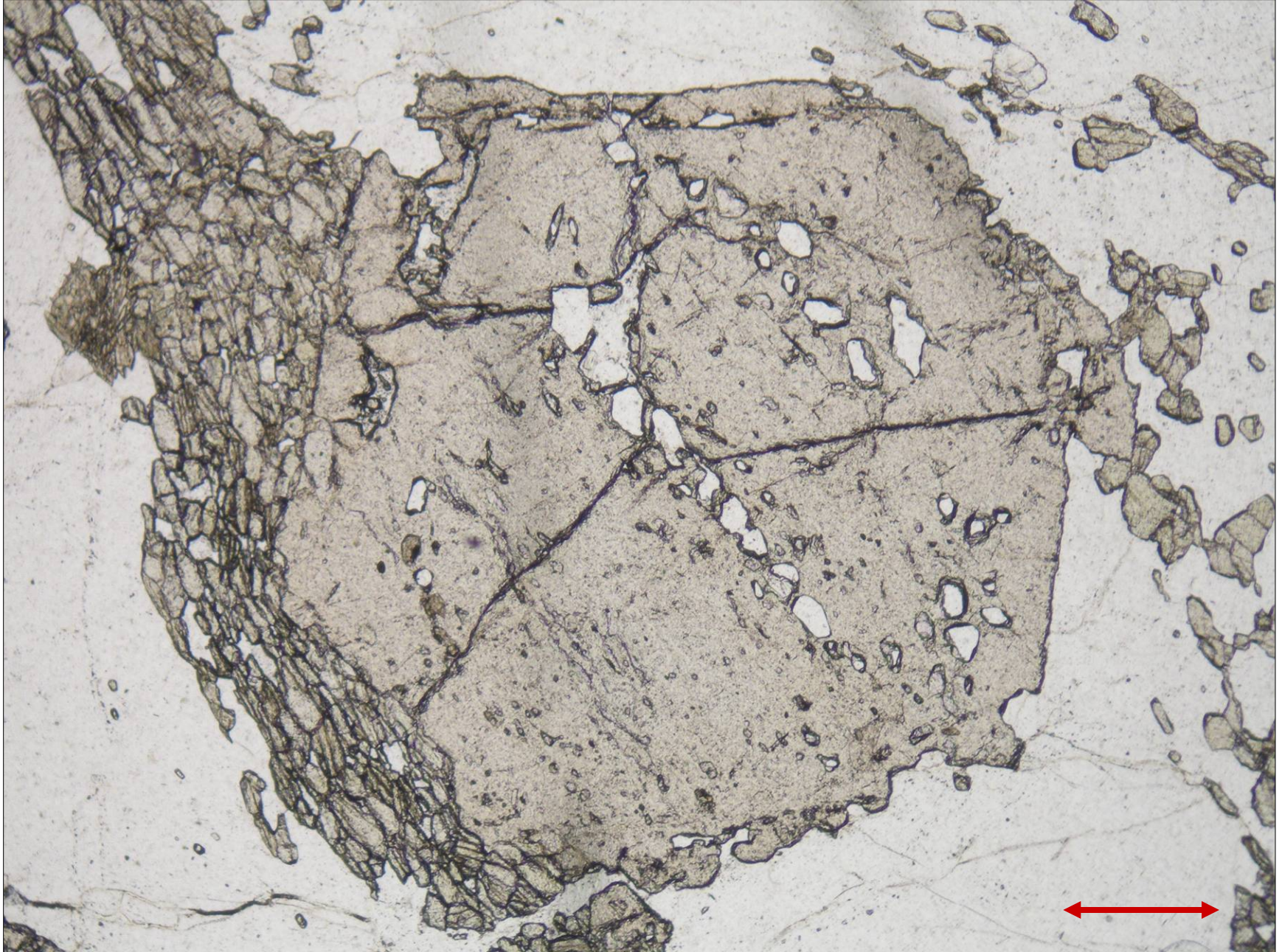
Garnet in metamanganolite from Vernířovice, the Czech Republic; PPL. Field of view is ca. 2.2 mm wide. Photo: JiZi.





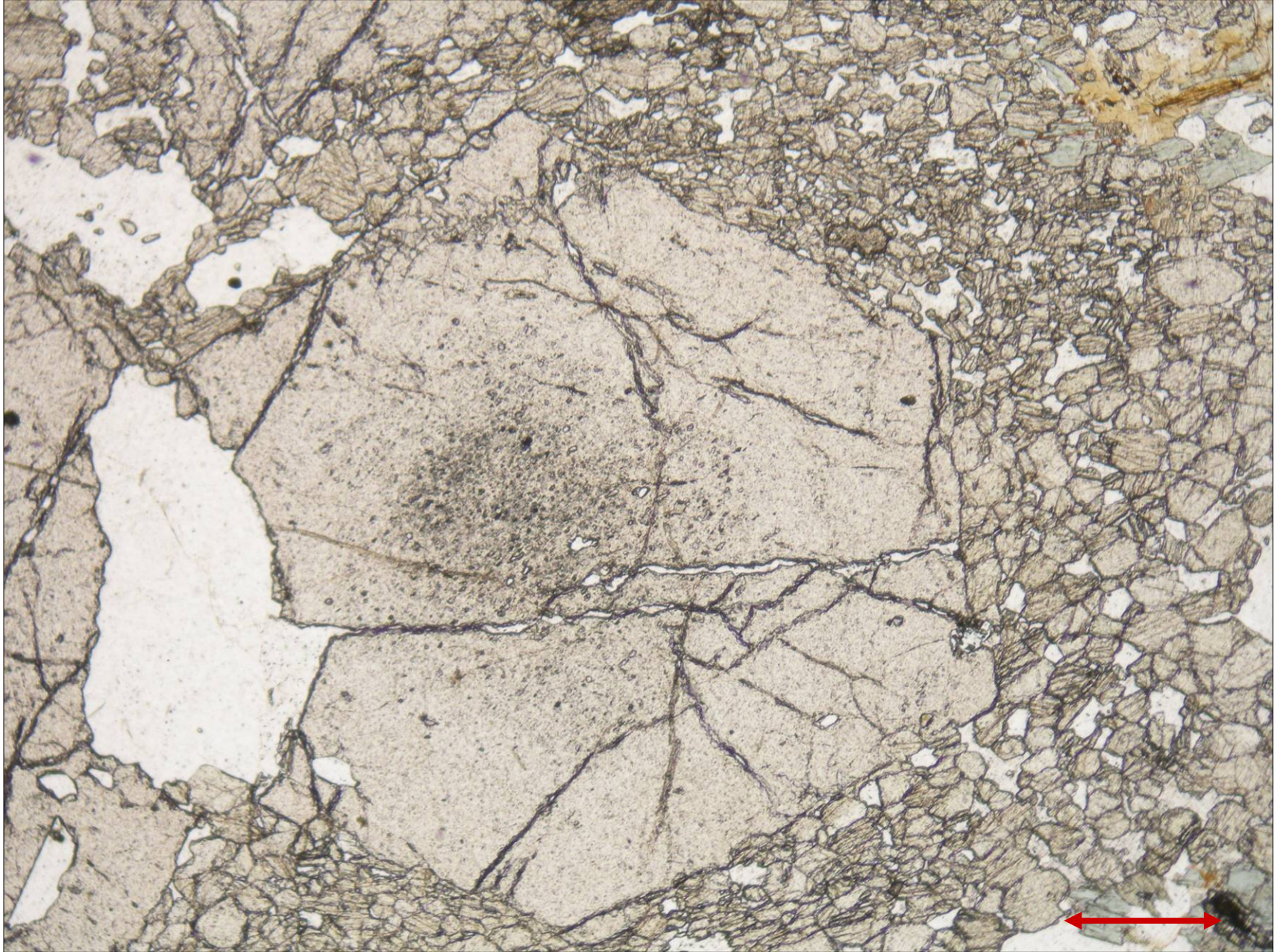
Garnet in metamanganolite from Vernířovice, the Czech Republic; PPL. Field of view is ca. 2.2 mm wide. Photo: JiZi.





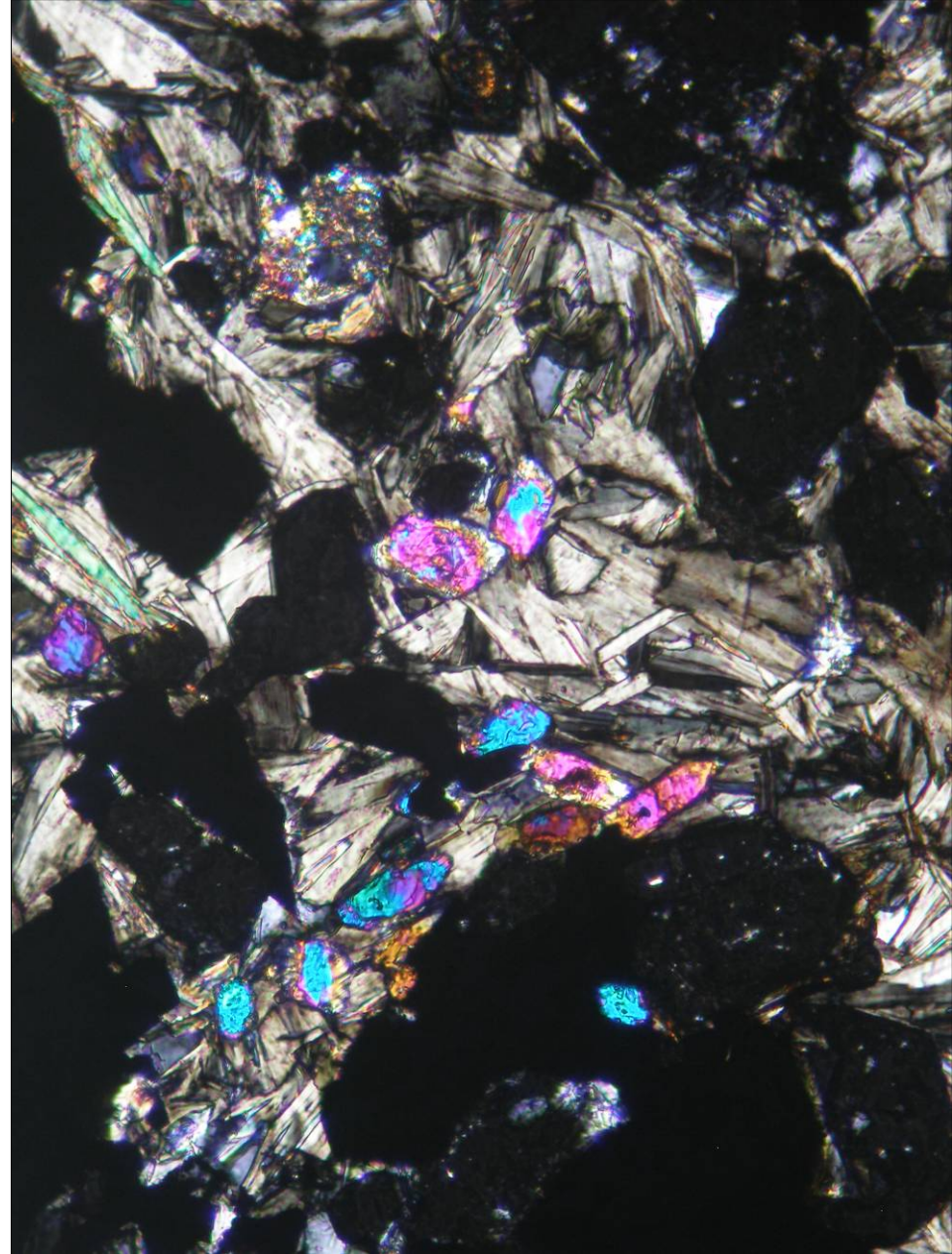
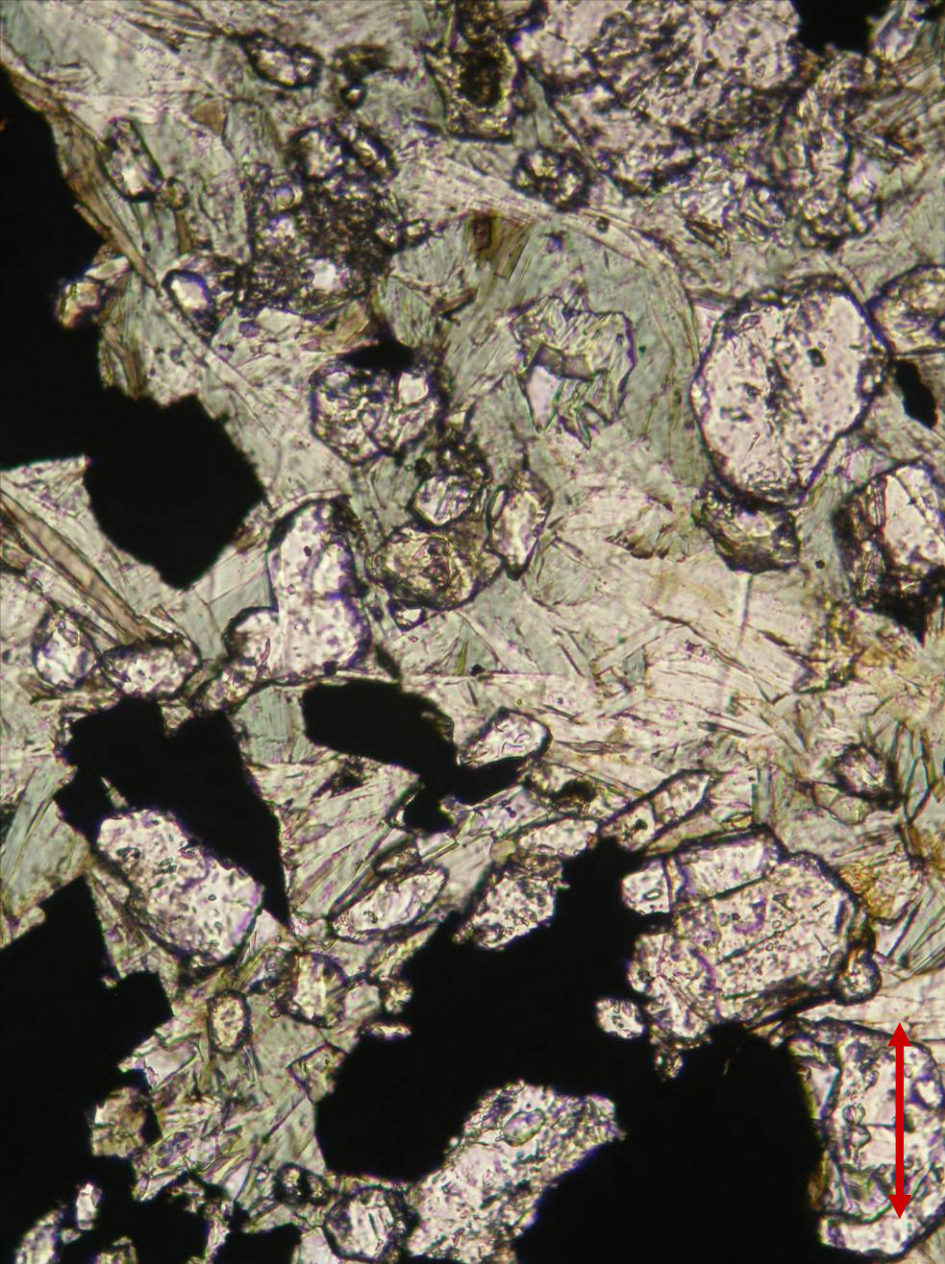
Garnet porphyroblast in metamanganolite from Vernířovice, the Czech Republic; PPL. Field of view is ca. 2.6 mm wide. Photo: JiZi.





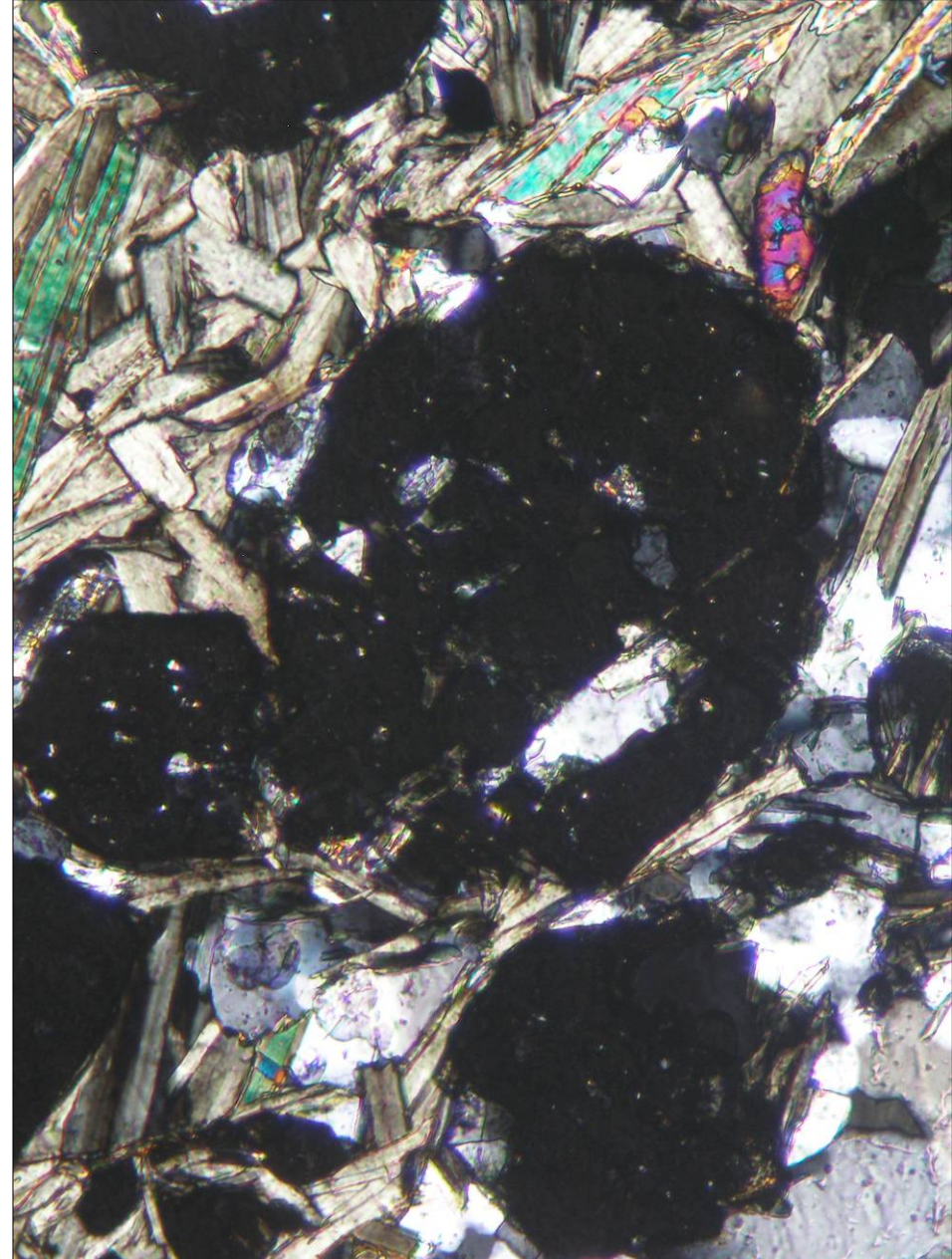
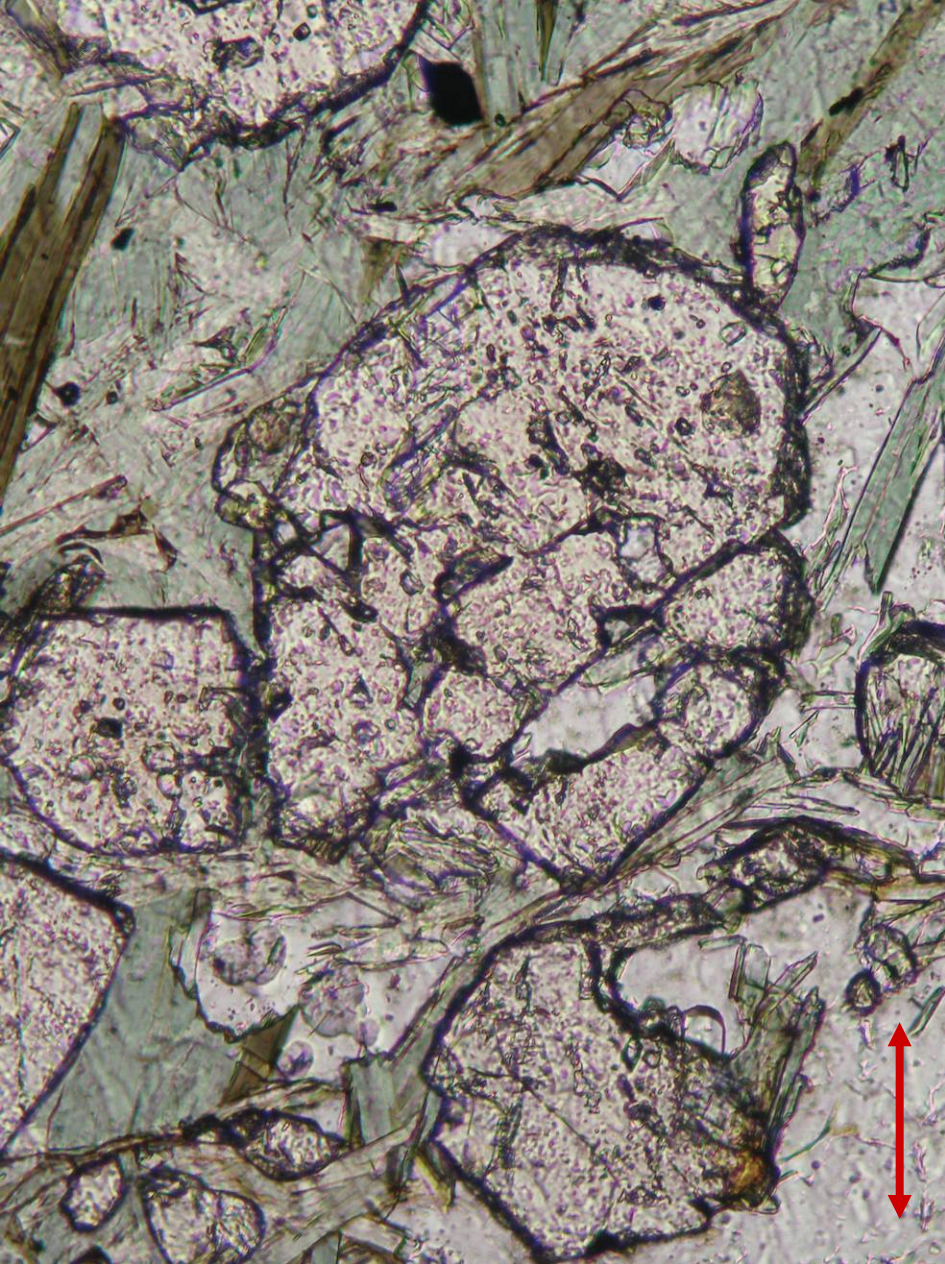
Garnet porphyroblast in metamanganolite from Vernířovice, the Czech Republic; PPL. Field of view is ca. 2.6 mm wide. Photo: JiZi.





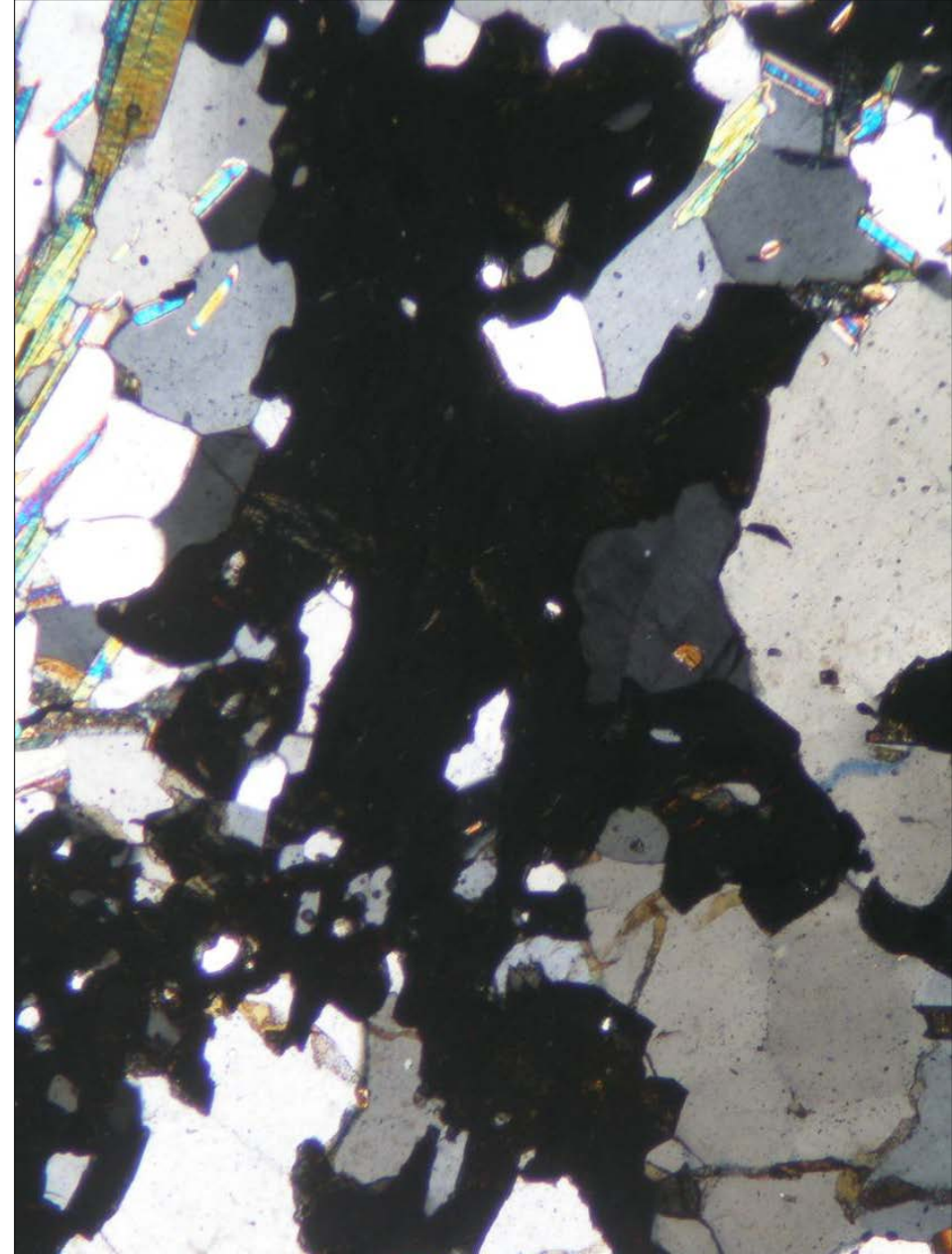
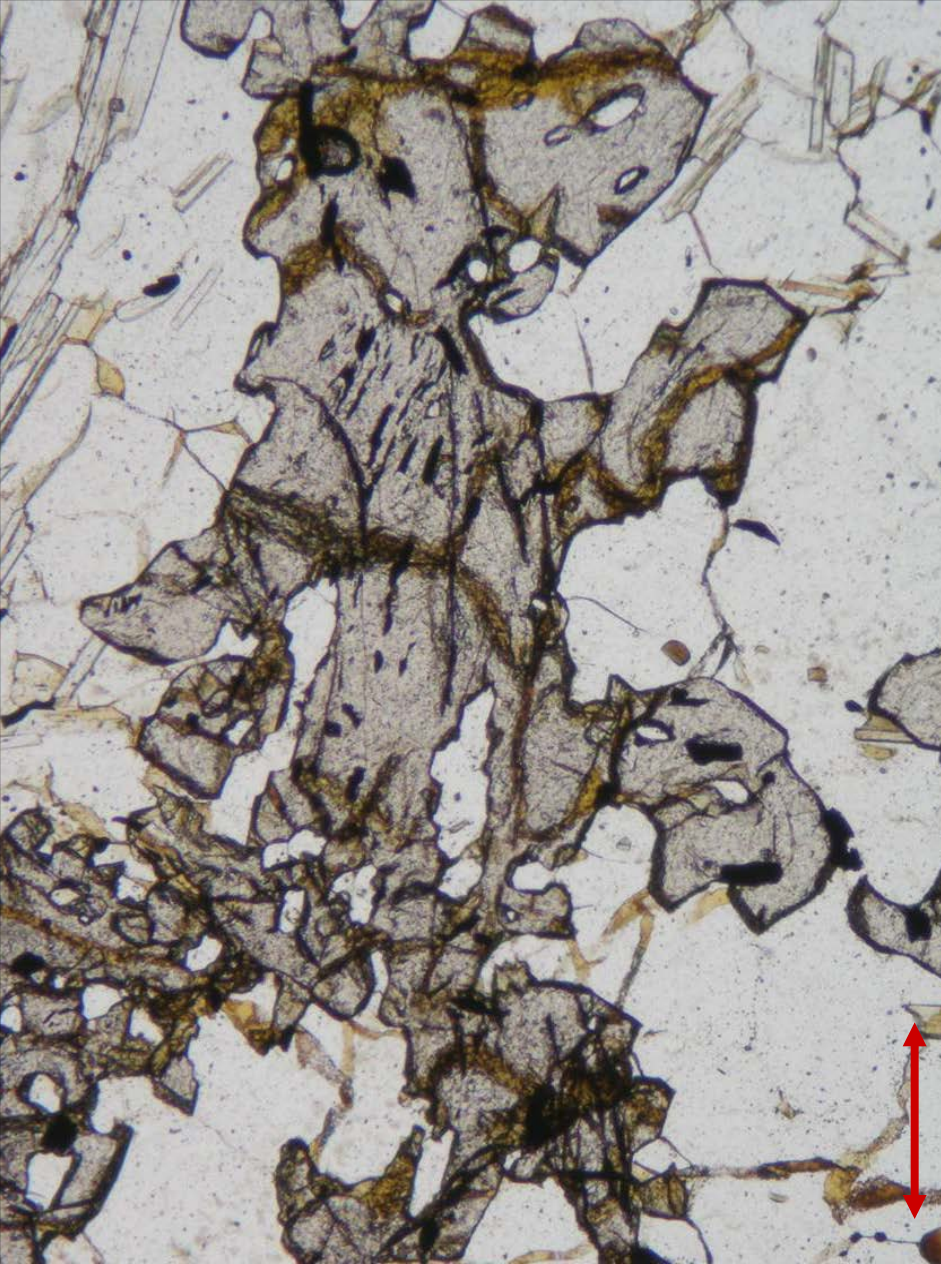
Garnet with magnetite, epidote and chloritized biotite in banded iron ore from Vernířovice, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.7 mm. Photo: JiZi.





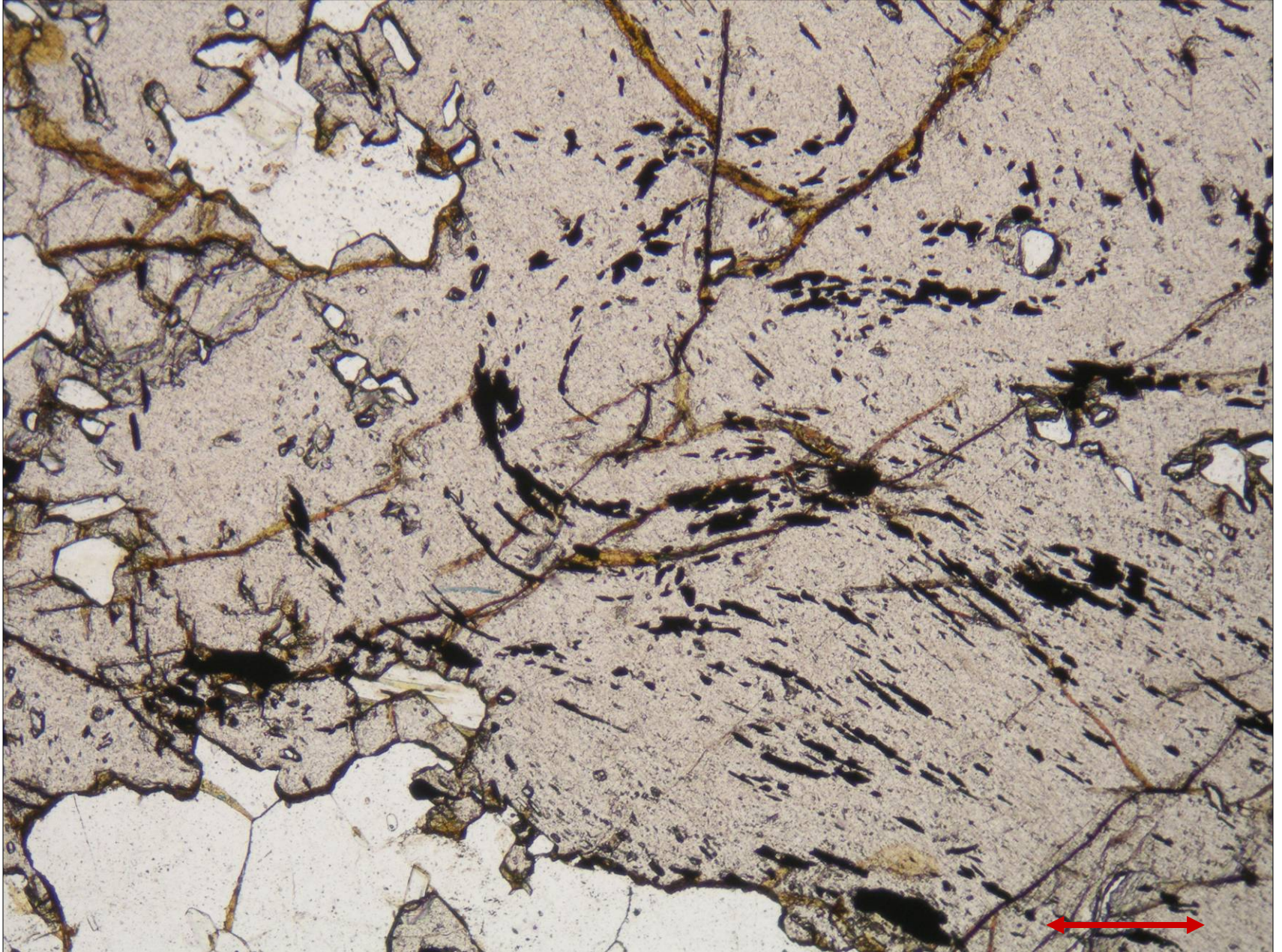
Garnet with epidote and chloritized biotite and quartz in banded iron ore from Vernířovice, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 0.7 mm. Photo: JiZi.





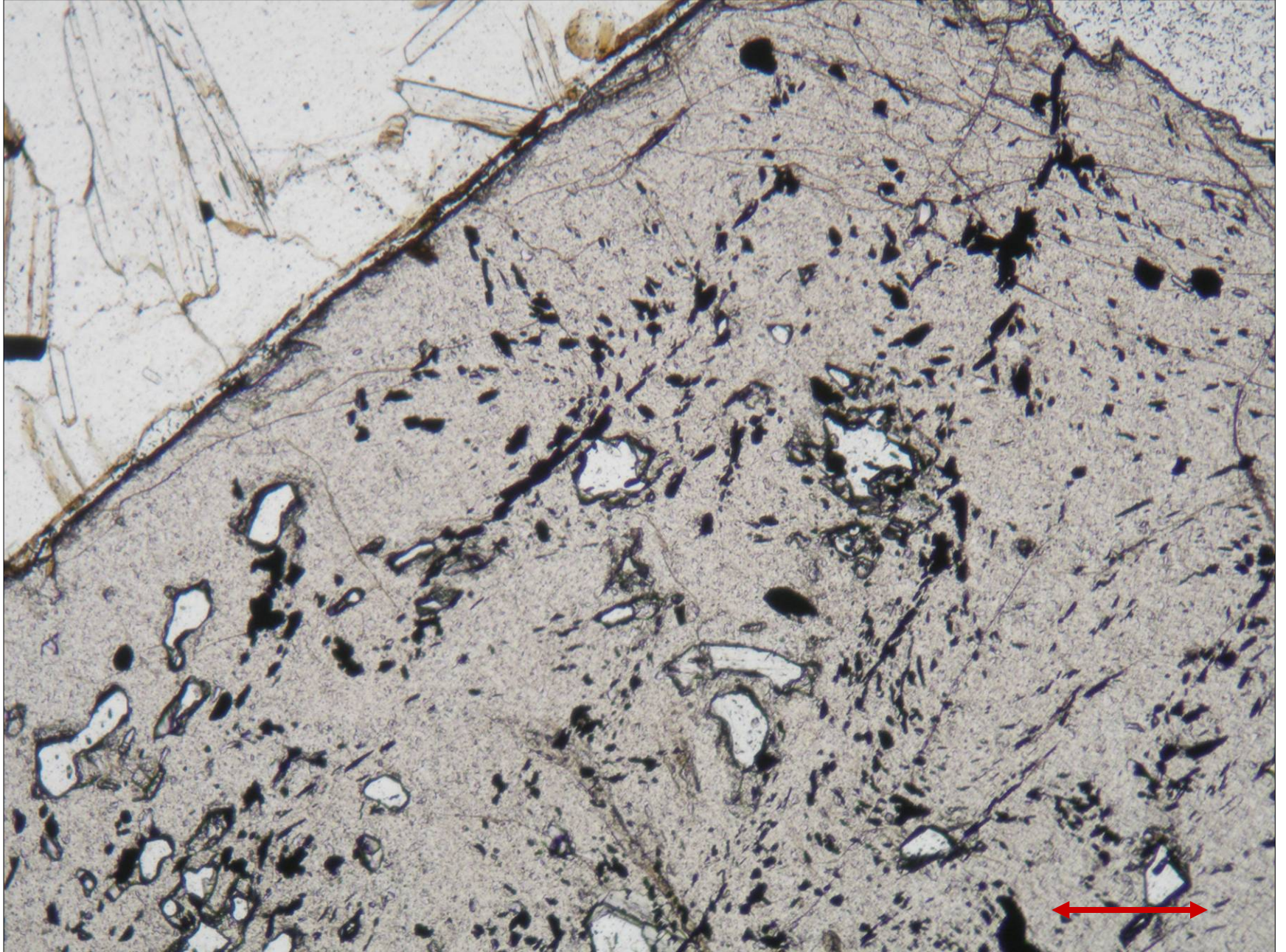
Garnet in mica schist from Česká Ves, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 1.6 mm. Photo: JiZi.





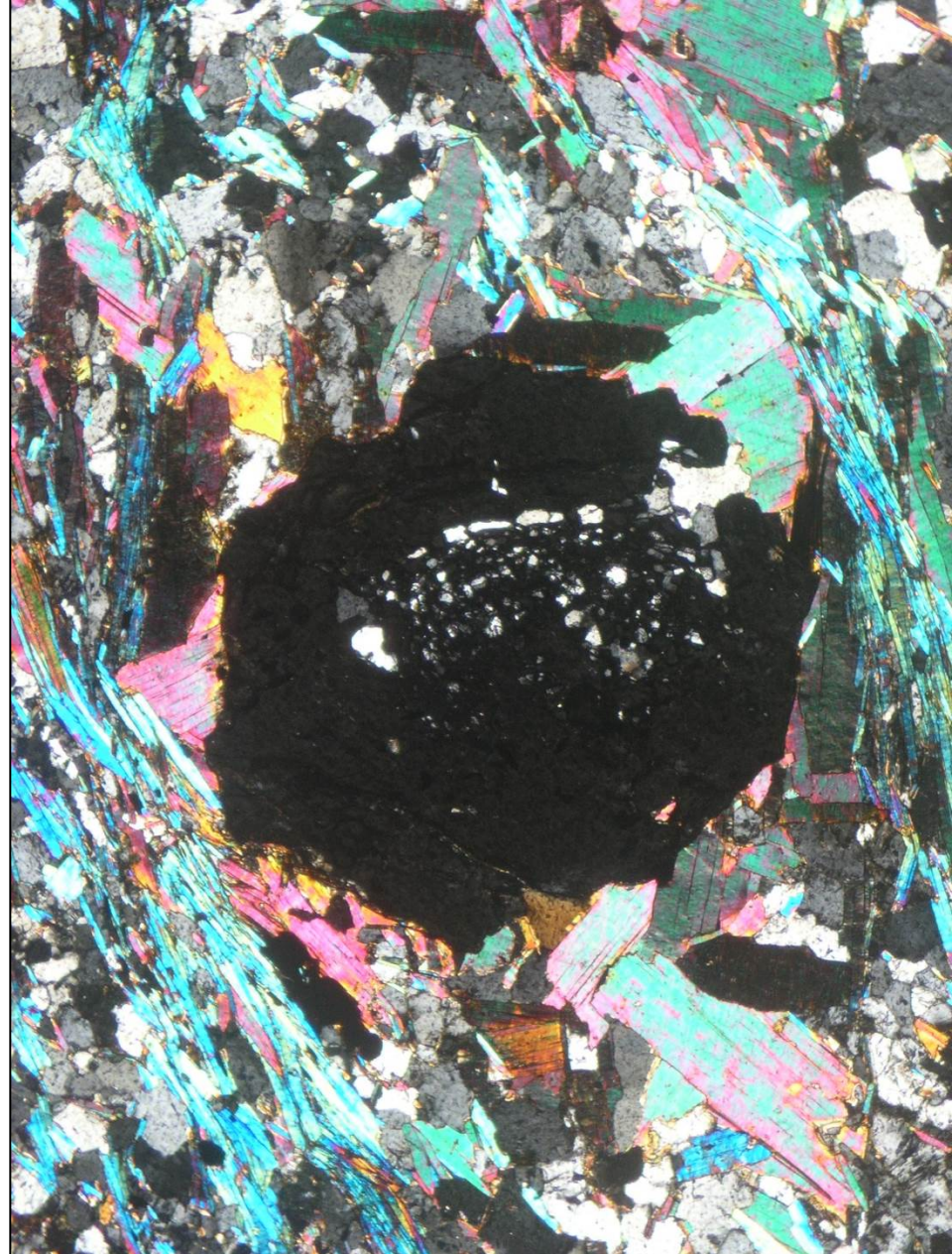
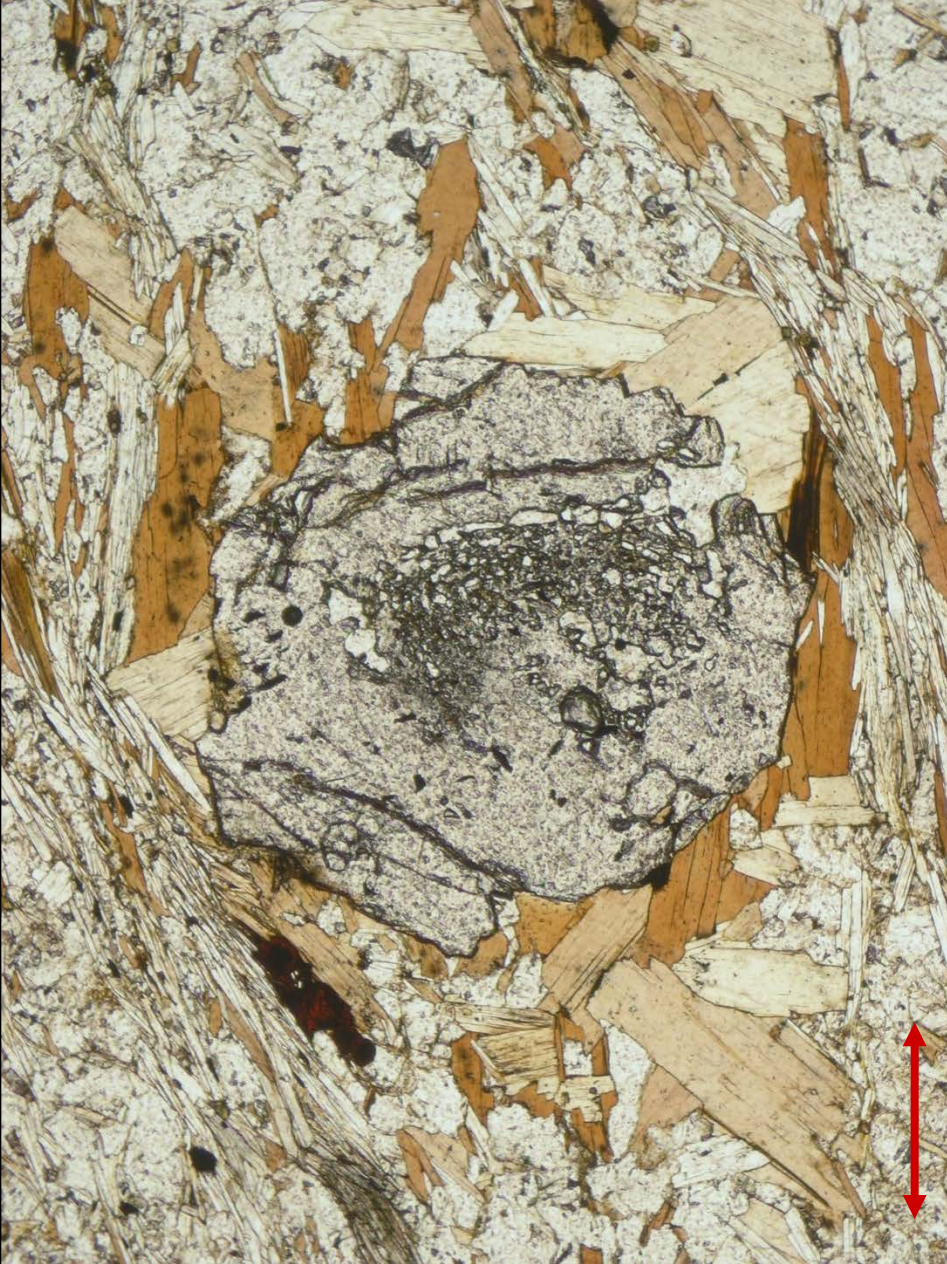
Garnet with opaque inclusions (mainly ilmenite) in mica schist from Česká Ves, the Czech Republic; PPL. Field of view is ca. 2.2 mm wide. Photo: JiZi.





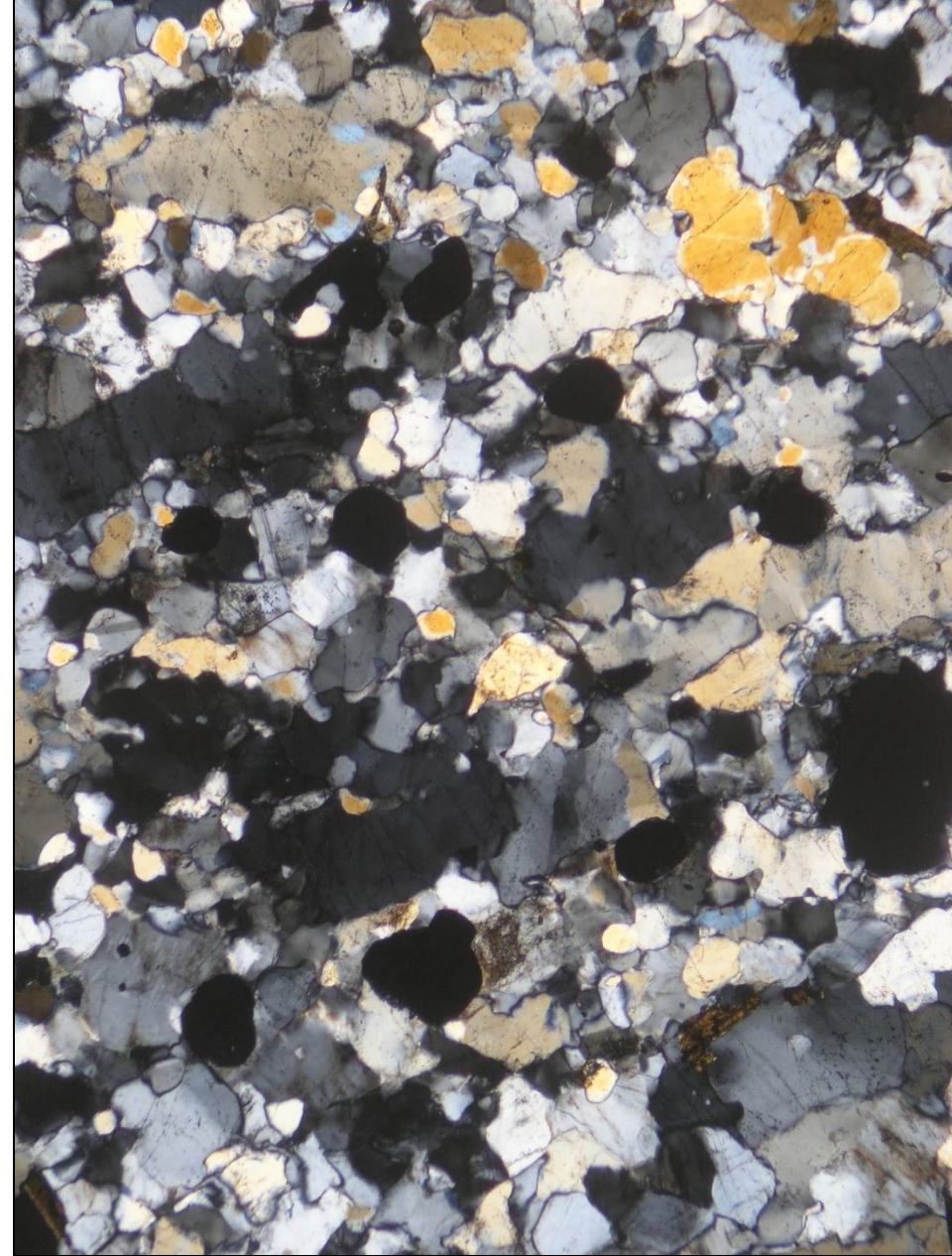
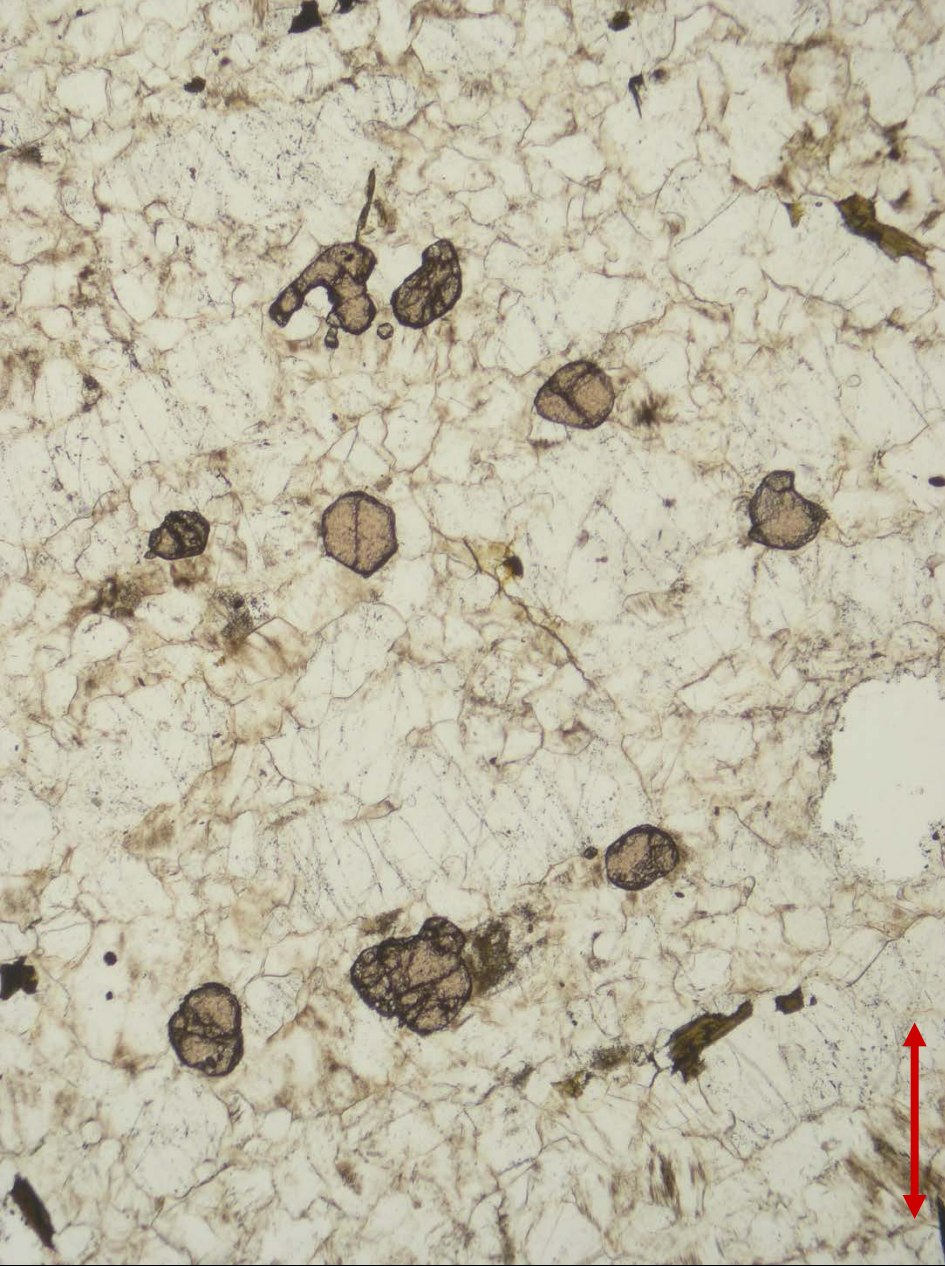
Ilmenite inclusions in garnet porphyroblast in mica schist from Česká Ves, the Czech Republic; PPL. Field of view is ca. 2.2 mm wide. Photo: JiZi.





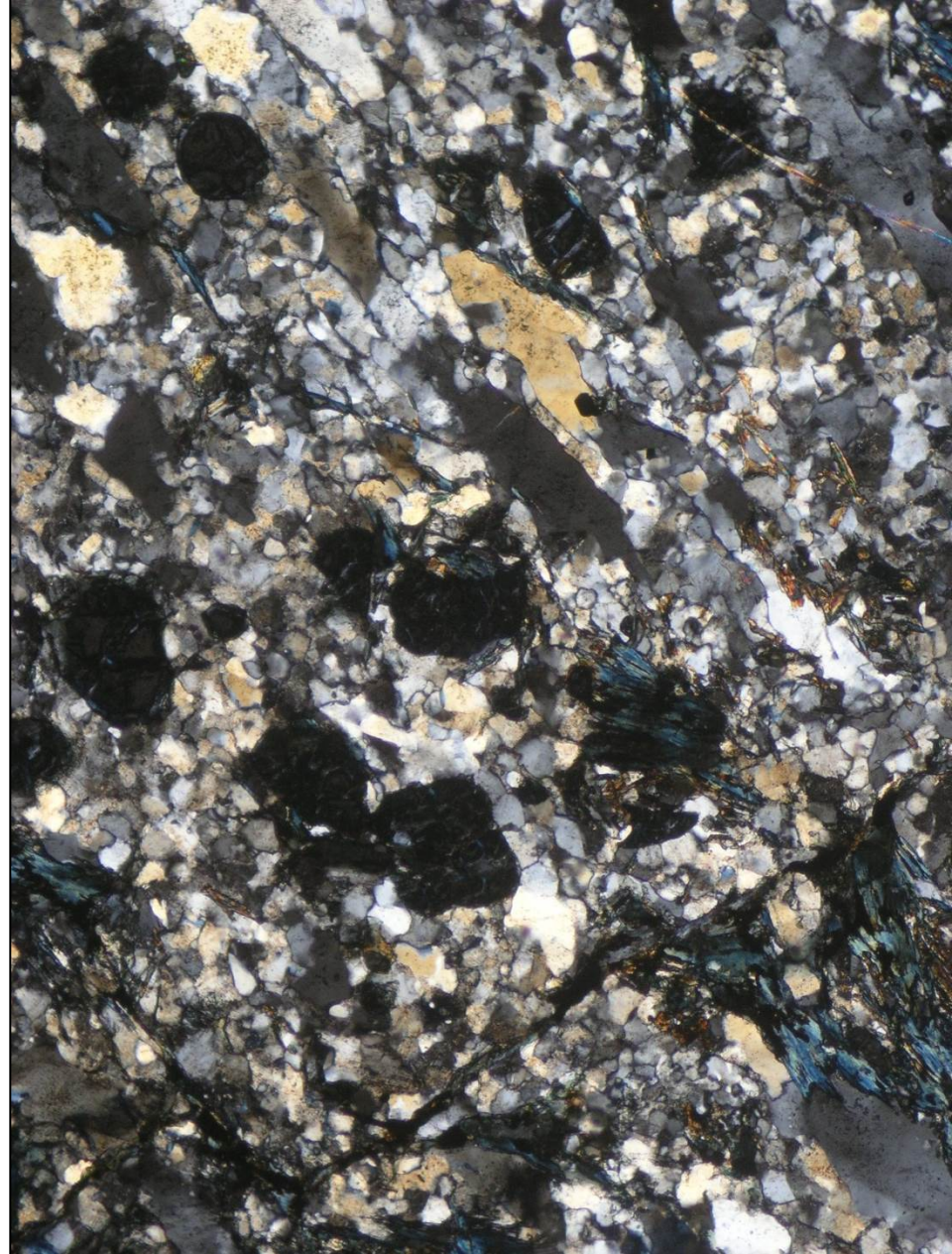
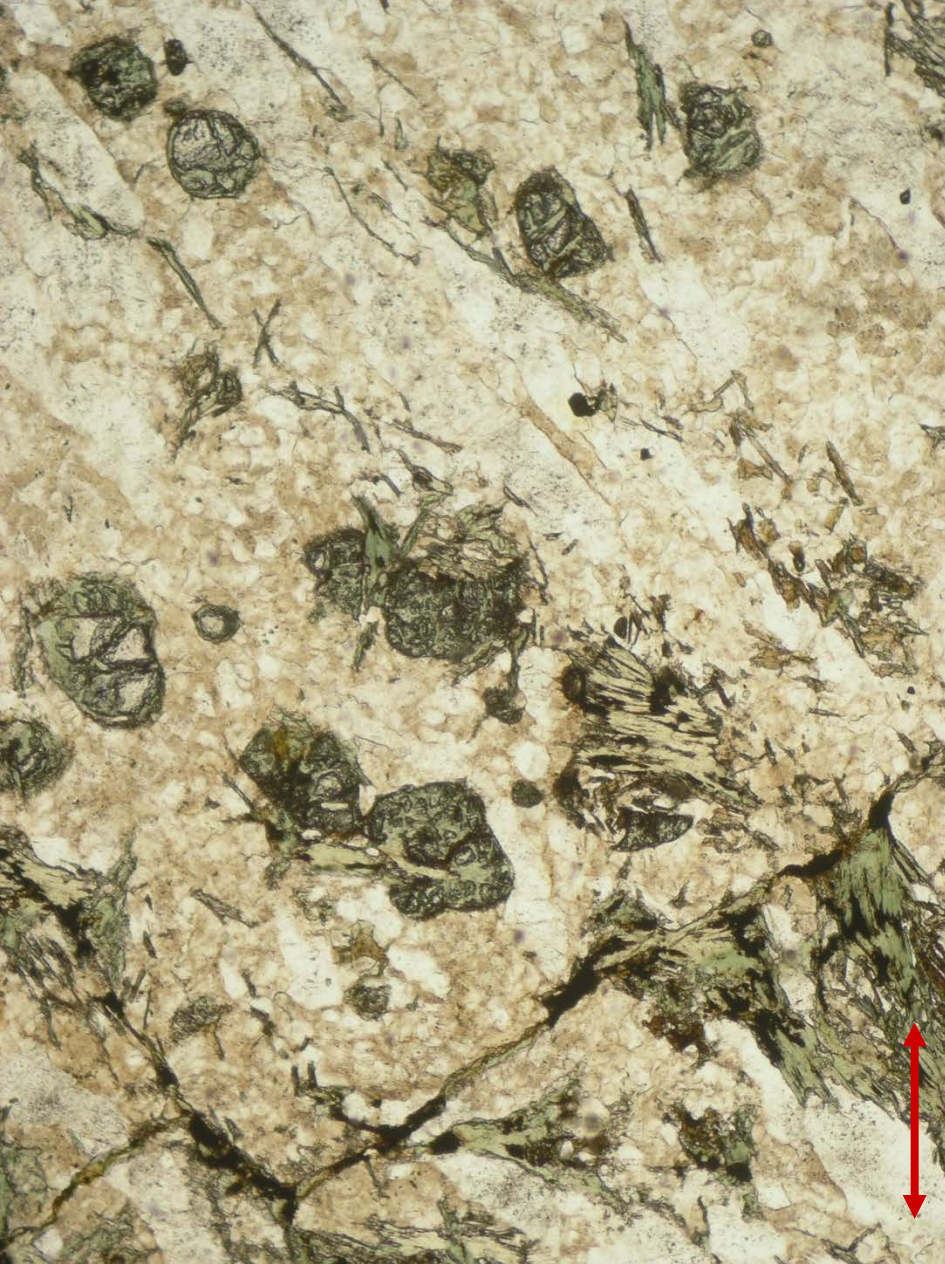
Garnet in paragneiss from Adolfovica, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.4 mm. Photo: JiZi.





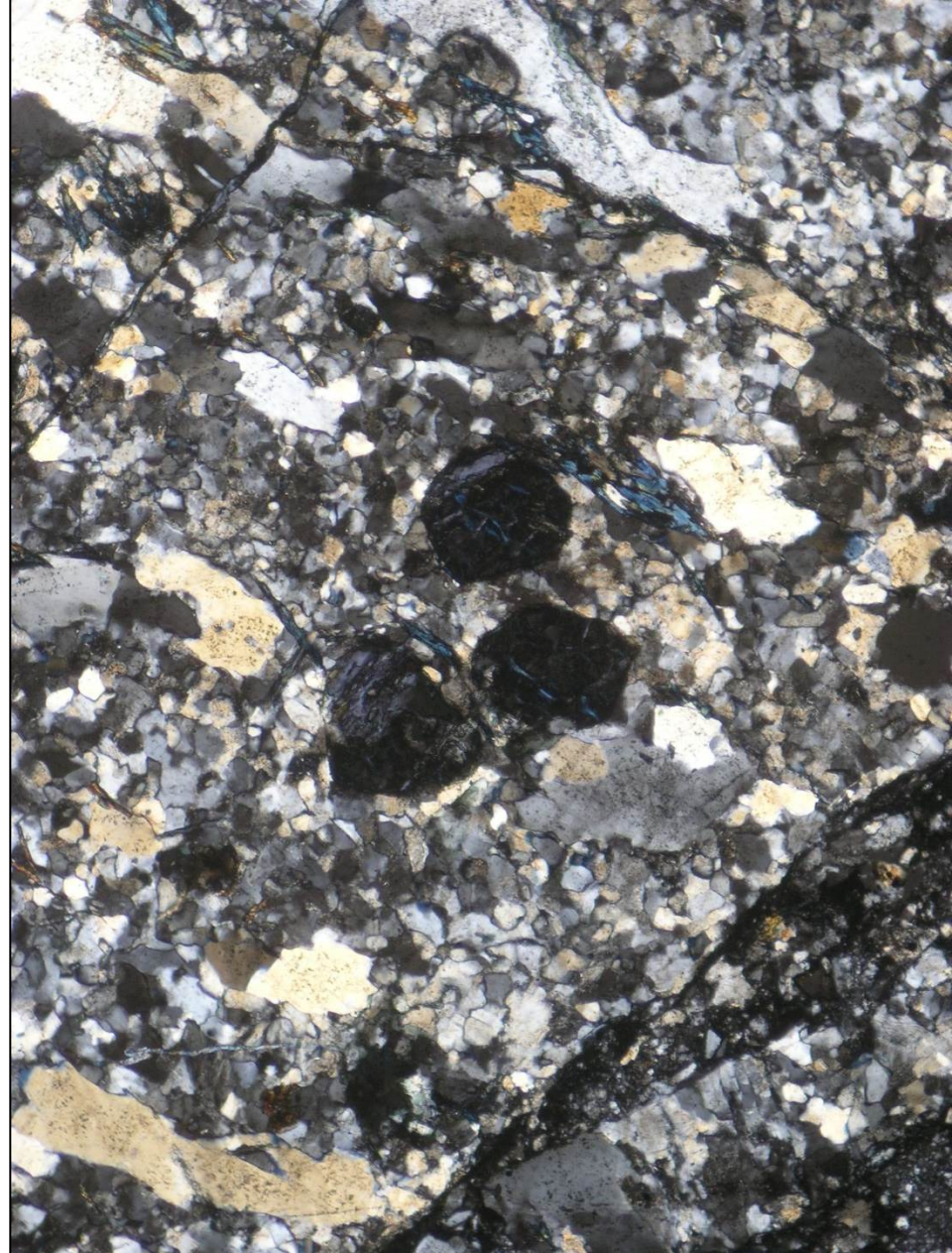
Garnet in granulite from Mohelno, the Czech Republic; PPL (left) and XPL (right). Width of fields of view is ca. 2.4 mm. Photo: JiZi.





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.





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.