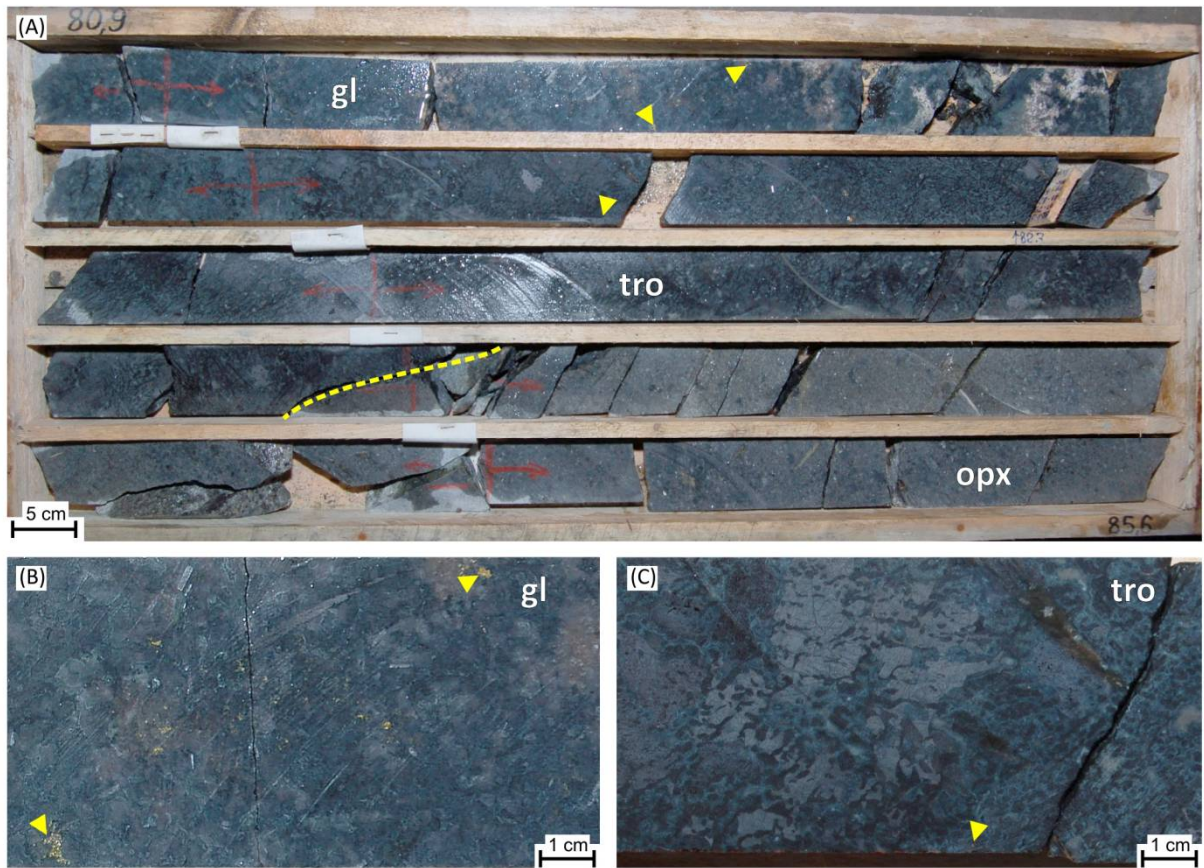
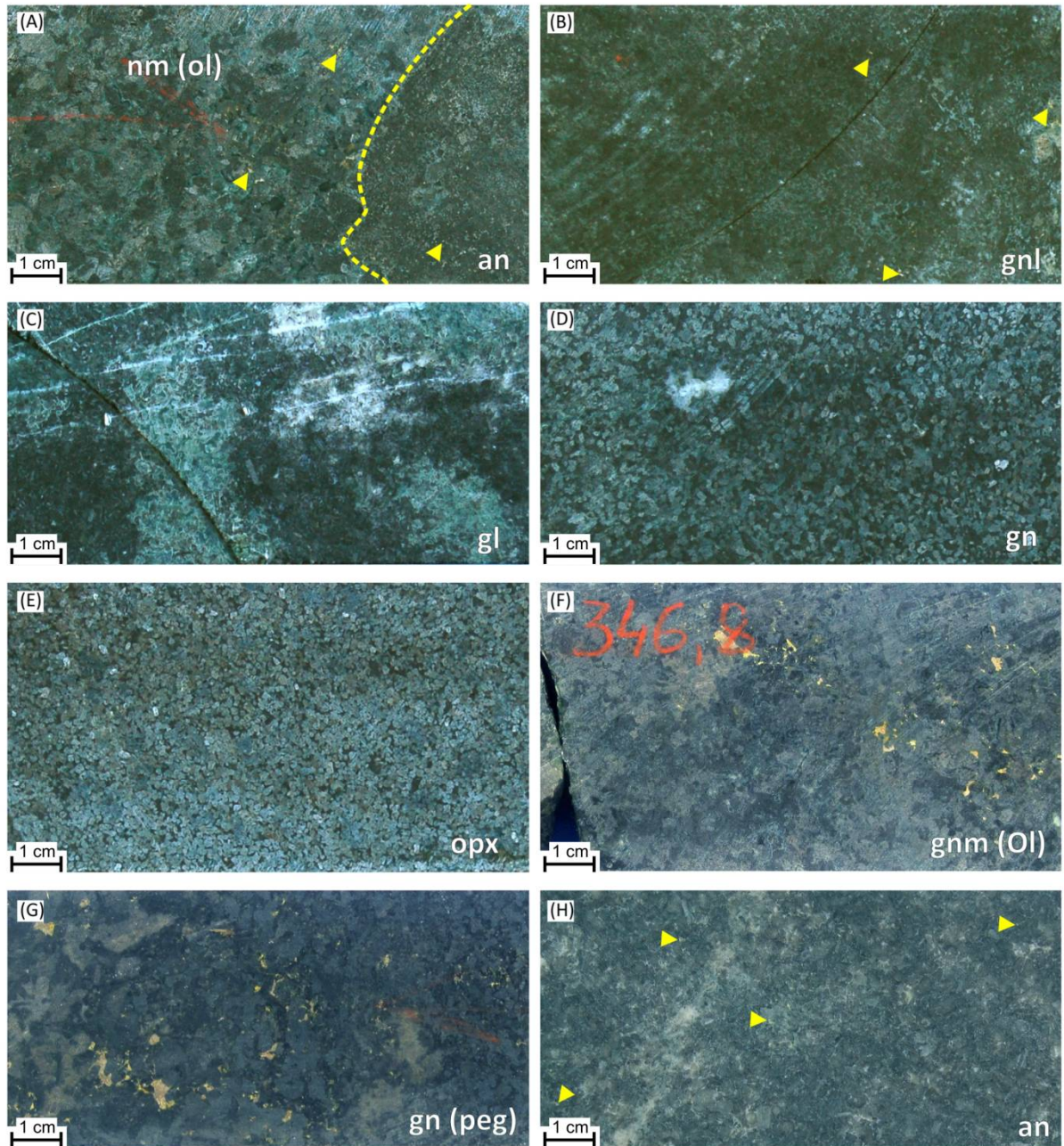


**Figure S1.** Different rock types from the Fedorova Tundra deposit of the Fedorova-Pana Complex. (A) Orthopyroxenite fragments in coarse-grained gabbronorite with blue quartz (borehole BG-F-773; depth: 109.80–114.65 m). (B) Sharp contact between an orthopyroxenite fragment and melanocratic olivine-bearing gabbronorite (borehole BG-F-828; depth: 48.8 m). (C) Melagabbronorite containing irregular sulfide dissemination (borehole BG-F-204; depth: 246.4 m). (D) Sulfide-enriched gabbronorite with blue quartz (borehole BG-F-252; depth: 22.7 m). (E) Pegmatitic amphibolized gabbronorite (borehole BG-F-203; depth: 146.5 m). Abbreviations: gn—gabbronorite; gnm—melagabbronorite; opx—orthopyroxenite; peg.—pegmatite; Ol—olivine; bQ—blue quartz.

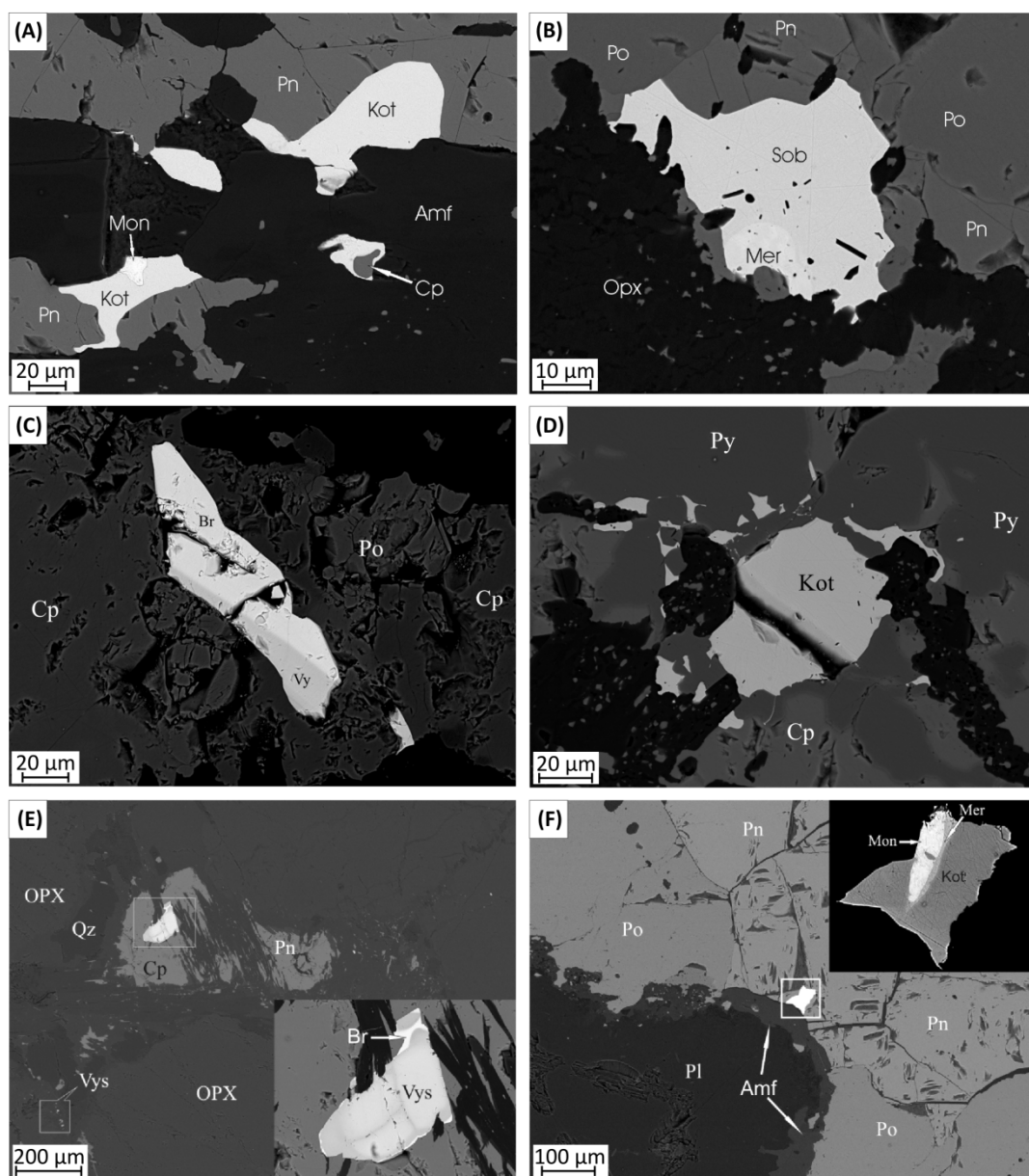


**Figure S2.** Different rock types from the FT-1 Reef in the Fedorova intrusion of the Fedorova-Pana Complex (borehole BG-F-501). (A) Mineralized upper portion of the troctolite layer (depth: 80.9–85.6 m). (B) Leucogabbro with irregular sulfide dissemination (depth: 81.3 m). Note that Pt + Pd content in this core sample is 48.6 ppm. (C) Melatroctolite containing individual sulfide grains (depth: 82.2 m). The rock is mainly composed of black olivine and grey plagioclase with a green reaction rim of amphibole. Note that large grains of brownish poikilitic orthopyroxene are also present. Pt + Pd content in the sample is 4.5 ppm. Abbreviations: gl—leucogabbro; tro—troctolite; opx—orthopyroxenite.

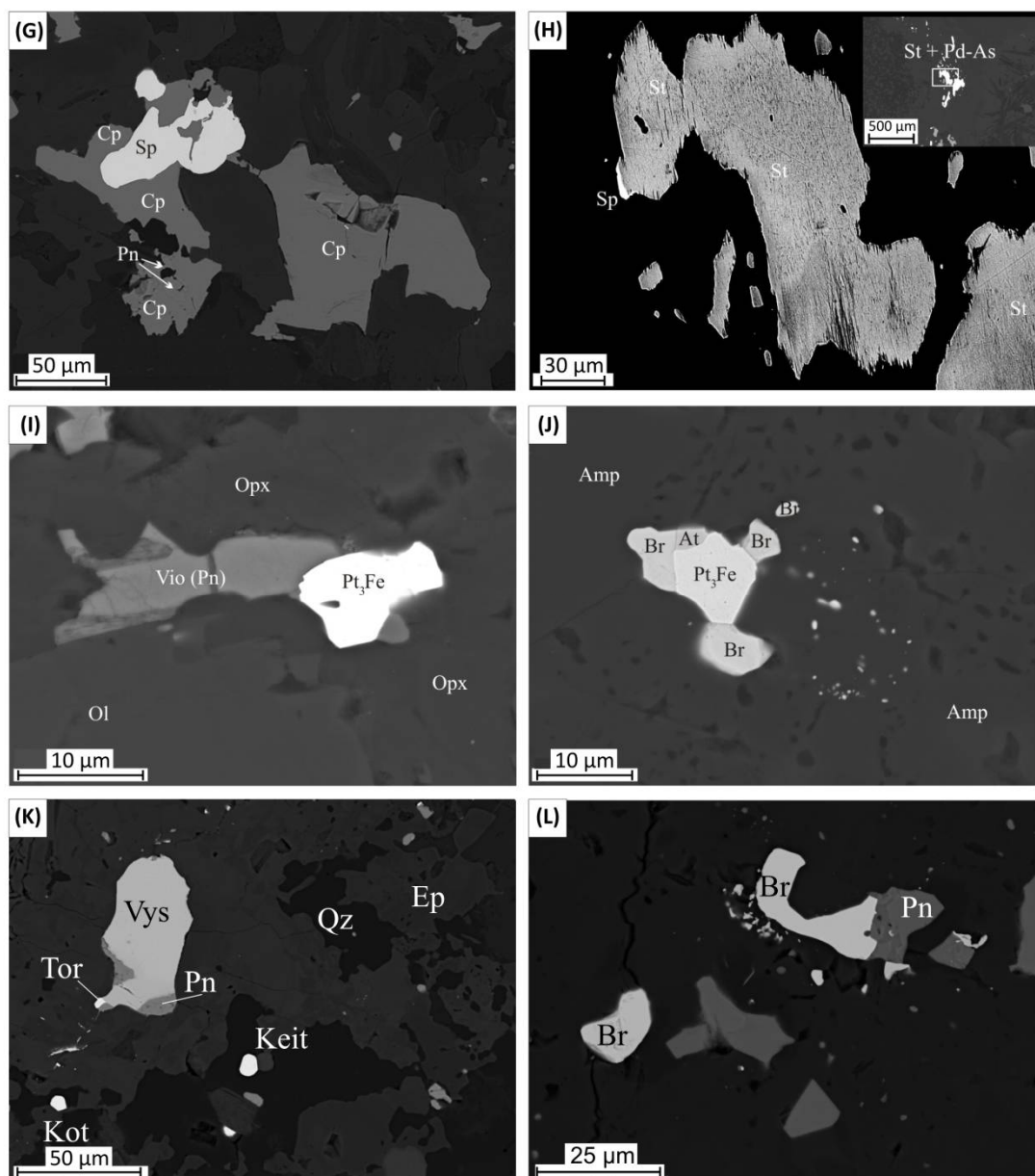




**Figure S3.** Different rock types from the main ore-bearing horizons in the West-Pana intrusion of the Fedorova-Pana Complex. (A–E) Kievey deposit (borehole 23). (A) A sharp contact between mineralized olivine melanorite from the base of the second cycle of the LLH and underlying anorthosite (depth: 163.6 m). (B) Mineralized leucogabbro (depth: 164.5 m). (C) Leucogabbro (depth: 167.8 m). (D) Gabbro (depth: 169.8 m). (E) Orthopyroxenite from the marker horizon (depth: 170.2 m). (F–G) North Kamennik deposit (borehole BG-N-126). (F) Olivine melagabbro from the main ore body (depth: 346.8 m). (G) Varied-textured gabbro from the lower ore body (depth: 355.1 m). (H) Mineralized anorthosite of the South Reef (borehole BG-S-30; depth 27.35 m). Abbreviations: an— anorthosite; gl—leucogabbro; gnl—leucogabbro; gn—gabbro; gnm—melagabbro; nm— melanorite; opx—orthopyroxenite; peg.—pegmatite; Ol—olivine.



**Figure S4.** BSE images of main platinum group minerals from Pt-Pd ores of the Fedorova-Pana complex. (A–B) Fedorova Tundra deposit, (C–D) North Kamennik deposit, (E–F) Kievev deposit. Mineral abbreviations: Amp, amphibole; At, atokite; Br, braggite; Cp, chalcopyrite; Ep, epidote; Keit, keithconnite; Kot, kotulskite; Ol, olivine; Opx, orthopyroxene; Pn, pentlandite; Pt<sub>3</sub>Fe, isoferroplatinum; Qz, quartz; Sp, sperrylite; St, stillwaterite; Tor, tornroosite; Vio, violarite; Vys, vysotskite.



**Figure S4.** Cont. (G–H) FT-1 Reef of the Fedorova intrusion, (I–J) FT-2 Reef of the Fedorova intrusion, (K–L) South Reef of the West-Pana intrusion. Mineral abbreviations: Amp, amphibole; Br, braggite; Cp, chalcopyrite; Kot, kotulskite; Opx, orthopyroxene; Pl, plagioclase; Pn, pentlandite; Po, pyrrhotite; Py, pyrite; Qz, quartz; Sob, sobolevskite; Vys, vysotskite.