

Figure S4. Microphotographs of the studied rocks. Plane polarized transmitted light: (A). Interstitial calcite crystals in coarse-grained nepheline syenites from Las Montañetas in a nepheline syenite-carbonatite composite dyke. (B). Idiomorphic pyrochlore crystals included in a calcite grain from Las Montañetas carbonatites (C). Backscattered electron image of the pyrochlore from photo (B). The zonation of the crystal is outstanding. (D). General aspect of Montaña de los Frailes urtites. Interstitial calcite and garnet occur next to Idiomorphic nepheline and aegirine augite. (E). Titanite idiomorphic crystals included in calcite from Montaña de los Frailes carbonatite. (F). Perovskite crystal replaced by Fe-Ti oxide mineral and titanite in perovskite-bearing pyroxenites of Playa de Esquinzo (G). General picture of perovskite-bearing melteigites from Playa de Esquinzo. Nepheline is interstitial. Aeg: aegirine; Aeg-Au: Aegirine augite; Ap: apatite; Cal: calcite; Dio: diopside; Fel: K-feldspar; Grt: garnet; Ne: nepheline; Phl: phlogopite; Prv: perovskite; Pyr: pyrochlore; Ti: titanite.



