

TUR2021 - 3rd International Conference on Tourmaline

PRE- AND POST-CONFERENCE FIELD TRIP OVERVIEW

TOURMALINE SUPERGROUP MINERALS IN THE PERALUMINOUS LATE MIOCENE INTRUSIVES AND THE SURROUNDING ROCKS IN THE ELBA ISLAND

The Elba Island is the type locality for *elbaite*, *tsilaisite*, *fluor-tsilaisite*, *celleriite*, *magnesiolucchesiite* and *uvite*.

The most famous tourmaline-bearing rocks in the Elba Island are represented by LCT gem-bearing pegmatites. Wonderful specimens and a significant number of species belonging to the tourmaline supergroup have been extracted from their pockets since the late 18th century. The LCT gem-bearing pegmatite dykes crop out only along the eastern edge of the Miocenic Monte Capanne pluton (6.9 Ma), strictly associated with the (cordierite±tourmaline)-bearing microgranites. After escaping the pegmatite bodies, some fluids still rich in B interacted with the mafic and ultramafic rocks of the metamorphic aureole. Here, depending on the chemical composition of the host, *uvite*, *dravite* and *magnesiolucchesiite* crystallized.

In the eastern Elba, a widespread B metasomatism of the micaschist host occurred at the contacts with the Calamita microgranite dykes-sills. *Schorl*, *dravite* and *uvitic tourmalines* have been found both as microgranular vein infill and breccia cement and as metasomatic aggregates replacing the biotite-rich layers of the micaschist.

Some peraluminous felsic magmas escaped the plutonic zone and reached a very shallow subvolcanic level forming the granite porphyry sills and laccoliths exposed in central Elba. In these rocks, tourmaline occurs as late-magmatic globular-spheroidal orbicules/nodules, usually showing the typical fibrous-radiating internal texture. In the Elba Island, the most spectacular example of orbicular tourmaline-bearing porphyries is represented by the Capo Bianco Aplite. According to geological and petrological data, this rock could be a prime example of the immiscibility process in (B, Li, F)-rich, peraluminous felsic magmas.

PRE-CONFERENCE FIELD TRIP (September 8, 2021)

THE EASTERN ELBA MAGMATIC-HYDROTHERMAL SYSTEM – THE RIO MARINA MUSEUM AND MINING PARK

This one-day field trip has the goal to illustrate some tourmaline occurrences related to the eastern section of the Elba Island. In this area, the low-angle Zuccale fault separates a lower plate, characterized by Late Miocene granite intrusions, contact metamorphism and circulation of high temperature B-rich hydrothermal fluids, from an upper plate characterized by a widespread formation of Fe-rich deposits (hematite-pyrite and pyrite-pyrrhotite ores in association with hedenbergite-ilvaite skarn).

Besides a series of acidic, tourmaline-bearing intrusives, in the coastal area of Barbarossa – Terranera it will be possible to visit the small ore deposit of Terranera and the larger ore deposits of the Rio Marina area. The visit in Rio Marina will include a tour in both the abandoned mines and the Mining Museum, organized by the Parco Minerario dell'Isola d'Elba. During the TUR2021 Conference, the Natural History Museum of Florence will organize at the Mining Museum the exhibit of a group of extraordinary historic mineral specimens with magnificent tourmaline crystals from San Piero in Campo.

POST-CONFERENCE FIELD TRIP (September 12-13, 2021)

THE FAMOUS "TOURMALINE-BEARING VEINS" OF THE SAN PIERO IN CAMPO AREA AND THE TOURMALINE OCCURRENCES OF CENTRAL ELBA AND CAPO CALAMITA

The first day, the field trip will bring participants through a well-exposed LCT gem-pegmatite dyke swarm that developed at the contact between the slightly peraluminous Monte Capanne monzogranite pluton and its contact aureole. This is one of the youngest LCT gem-pegmatite complexes in the planet (6.9 Ma). The overall small size of these pegmatite dykes allows for the study of structure, texture, mineralogy and geochemistry at a more manageable scale than in larger LCT pegmatites. The high number of pegmatitic dikes at different degree of geochemical evolution and the various types of hosting rocks allowed the development of tourmaline crystals with variable composition, resulting in the occurrence of a quite large number of tourmaline species.

The second day, the field trip will give an overview of tourmaline variability from both plutonic and subvolcanic settings. In the southernmost area of the Calamita Peninsula, we will visit an outcrop of tourmaline-bearing microgranite dyke-sills, which shows enigmatic magmatic textures involving tourmaline microliths. In the afternoon, we will visit the subvolcanic granite porphyries (emplaced at 1-3 km depth) of the central Elba. Here, tourmaline crystallized as a late magmatic (spots and orbicules) and hydrothermal (veins, breccias) phase like in the plutonic rocks. The main difference is the total lack of pegmatites in subvolcanic rocks, although small miarolitic cavities (from mm to few cm) can be locally found.

All the participants should dress:

light pants (short pants could be more comfortable, but pay attention as the Mediterranean bush is terrible for the skin; best option would be a trekking pant convertible to shorts), T-shirt, long-sleeved trekking shirt, hat, and light trekking boots (a lightweight rain jacket in the backpack could be useful in the very unlikely case of bad weather).

A swimsuit is recommended, because the Elba Island provides many chances to take a swim in beautiful waters near interesting geological outcrops. There will be the possibility to walk along the shoreline and, depending on seasonal sea storms that may have carried away the beach, it could be necessary to walk for few meters in shallow waters (up to the waist at maximum; no risks of echinus or other sea-animals). People that dislike walking by bare feet can dress light plastic sandals (which can be bought for few Euros in Portoferraio).

The itineraries of both pre- and post-conference field trips are easy, requiring low (to middle) trekking skill. Nevertheless, the path to the Grotta d'Oggi (12 September) is a little more tiring due to the greater difference in height between the road and the outcrops.

The field trips are organized with the kind assistance of **Pelagos** (<https://www.pelagos.it/en/>), a cooperative of Elba Island that combines environmental education, social projects, scientific research and hiking.