

E. FERRETTI

**LE RISORSE METALLIFERE E LAPIDEE DELL'ISOLA D'ELBA.
FATTORI GEOLOGICI PREDISPONENTI, CENNI STORICI SUGLI UTILIZZI,
PROSPETTIVE DI TUTELA E VALORIZZAZIONE**

Area tematica: Cultura ambientale e sviluppo sostenibile

Tutor: M. D'Andrea; Cotutor: F. Capitanio

II sessione 2006 (ottobre 2006-gennaio 2007)

The Historical and Geological Collections of APAT, inherited from the Geological Service of Italy, also keep eighteen mineralogical samples and twenty two lithological samples, coming from the main mining sites of the Elba Island. The Elba mining district is the most important in Italy and it is also well renowned worldwide. In fact, the mining activity on this small island strongly influenced the history of the whole Mediterranean basin. The peculiar geological structure of the Elba Island accounts for its mineralogical wealth. In fact, the geological history of the island led to concentration of numerous and various rock-types and mineral species in a relatively small area.

From the geodynamical point of view, the Elba Island is a section of the Northern Apennine belt. The island can be subdivided schematically into five tectono-stratigraphical complexes. They include metamorphic rocks of the basement, having Hercinian age and successively involved in the Alpine orogenesis. Sedimentary terrains range from Mesozoic to Cenozoic. Also igneous rocks of batholiths emplaced during Tertiary occur. The Elba terrains form a succession of eastward overlying folds: this arrangement is a consequence of the orogenetic thrust originated from the opening of the Tyrrhenian basin. Successive lifting and extension of the Elba terrains were induced by raising of plutonic bodies in the western (Monte Capanne) and eastern (Porto Azzurro) sectors of the island.

From the tectono-metallogenic point of view, most of the useful mineralizations of the Elba Island can be ascribed to raise of mineralizing fluids. These fluids, belonging to a pneumatolitic-hydrothermal regime, circulated inside the network of fractures and extensional faults connected with the late plutonic phase. At first, fluids caused washing of mother-rocks and re-mobilization of chemical elements (mainly iron). Successive interactions with country-rocks (schists and limestones) led to deposition of these elements in mineral assemblages (with prevailing hematite and magnetite). It is also possible that iron-bearing minerals already accumulated during the sin-sedimentary phase, under particularly reducing conditions, as lenses embedded into the making rock

strata. These lenses could have acted as sources of the chemical elements re-worked during the successive plutonic activity.

The main mineral assemblages can be summarized as follows: iron oxides and hydroxides, with minor amounts of copper sulphides, originated from interaction between mineralizing fluids and schists; the characteristic skarns, built up by ilvaite (a typical silicate that takes its noun from the Elba Island) together with clinopyroxenes and micas or amphiboles, originated from thermometamorphism on limestones.

Also the granodioritic bodies, chiefly the Monte Capanne one, gave building and decorative stones with good lithotechnical features since the Roman age.

The Elba Island boasts a long mining history. In fact, this district gave iron-bearing minerals since proto-historical times. Iron mining and working have been crucial factors for development of the Etruscan civilization. Mining activity ceased in 1981. Nevertheless, ancient mining sites still draw visitors from all over the world. Both mineral collectors and tourists can enjoy several equipped sightseeing paths as well as mineralogical museums. On the other hand, quarries inside the granodioritic batoliths are still active.

The Elba Island has been included in the “World Heritage Provisional List of Geological Sites” by UNESCO. Starting from the second half of the past century, several public bodies have been established to protect and to exploit the dismissed mining sites of the Elba Island. The *Comunità Montana dell’Arcipelago Toscano*, the *Parco Nazionale dell’Arcipelago Toscano* and the *Società Parco Minerario Isola d’Elba s.r.l.* are the most important institutions engaged in environmental recovery and tourism exploitation of the island.