



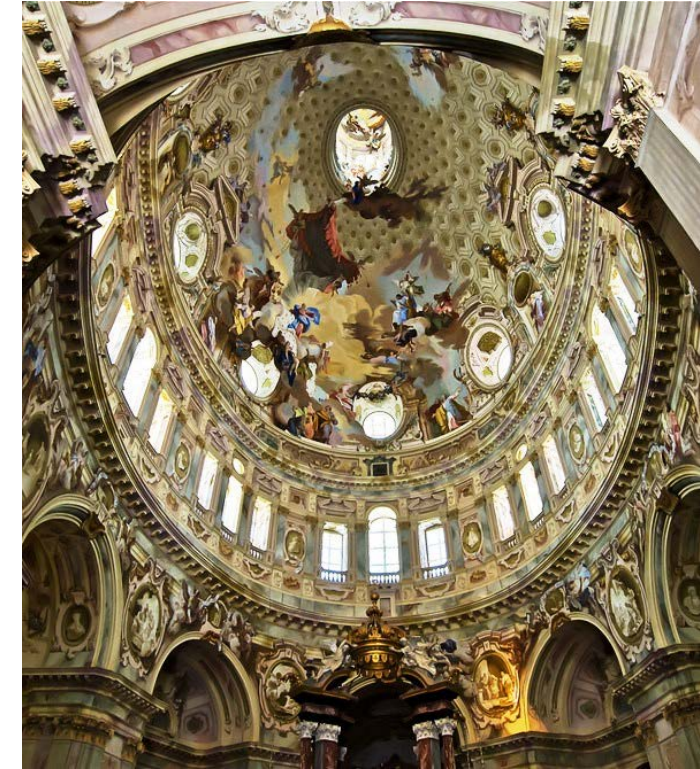
Vicoforte sandstone in Cultural Heritage

R. Bellopede, C. De Regibus, P. Marini

Department of Environment, Land and Infrastructure, Politecnico di Torino, Italy

contact: paola.marini@polito.it

The Vicoforte Sanctuary (Vicoforte - Mondovì)



At the end of the XVI century the court architect Ascanio Vittozzi was asked by Duke Carlo Emanuele I of Savoy to build a large sanctuary in honor of the Virgin Mary. The architect Vitozzi died in 1615 leaving the wall structure at 12mt height. Those walls were erected using a sandstone from a quarry located nearby, good for cladding but not for carvings of capitals and frames. (Billò, 2005)

Architect Francesco Gallo started in 1701 to build the elliptic enormous dome of 74 metres high and 36 metres in diameter.

The three façades and the bell towers of the Sanctuary were completed in the XIX century together with the building of a Cistercian monastery and palace, placed opposite the basilica. The temple is richly decorated and creates a wonderful visual effect: in the spacious interior of the building, in fact, light filters through the large oval windows, exerting a strong fascination on visitors.

The Vico stone

The stone used by Architect Vitozzi to build the Sanctuary was a litarenite with carbonate cement named Vico stone.

Thanks to historical documents (Billò, 2005), the site of the quarry of origin of the Vico stone is well known and is located in the Candia valley, few kilometers from the construction site of the future sanctuary. Since the beginning of the 1500s, the quarry supplied the blocks for the construction for example of the cathedral of nearby Mondovì. The sandstone of Vico is suitable for the walls but not for the carving of capitals and cornices, for which in the area there were however a large variety of white and colored marbles available, widely used over the years and in the following centuries in all Piedmont churches. From the geological point of view the quarry is part of the San Paolo Formation (San Michele di Mondovì, Langhe sub-basin) in the western part of the Piedmont Tertiary Basin (BTP) according to the geological map of Piedmont (Piana et alii, 2017).



Photo of Prof. Vanni Badino



The Church of Santa Maria al Monte dei Cappuccini – Torino – Italy)



The works for Church of Santa Maria al Monte (the church of Cappucini in Turin) began in 1583 but, after a long interruption the yard, was taken up again in 1611 under **Architect Ascanio Vitozzi**, who completed the project of the church with a Greek cross plan and an octagonal masonry drum. Vitozzi died in 1615 and work continued with the architects

Carlo di Castellamonte, and then with his son Amedeo. The church was consecrated in 1656. Severely damaged by bombing during the Second World War, the building was restored after the war.

As for the Vicoforte Sanctuary, sandstone was used by the architect in both the external and internal walls in the Santa Maria al Monte church of Turin, but its origin is unknown.



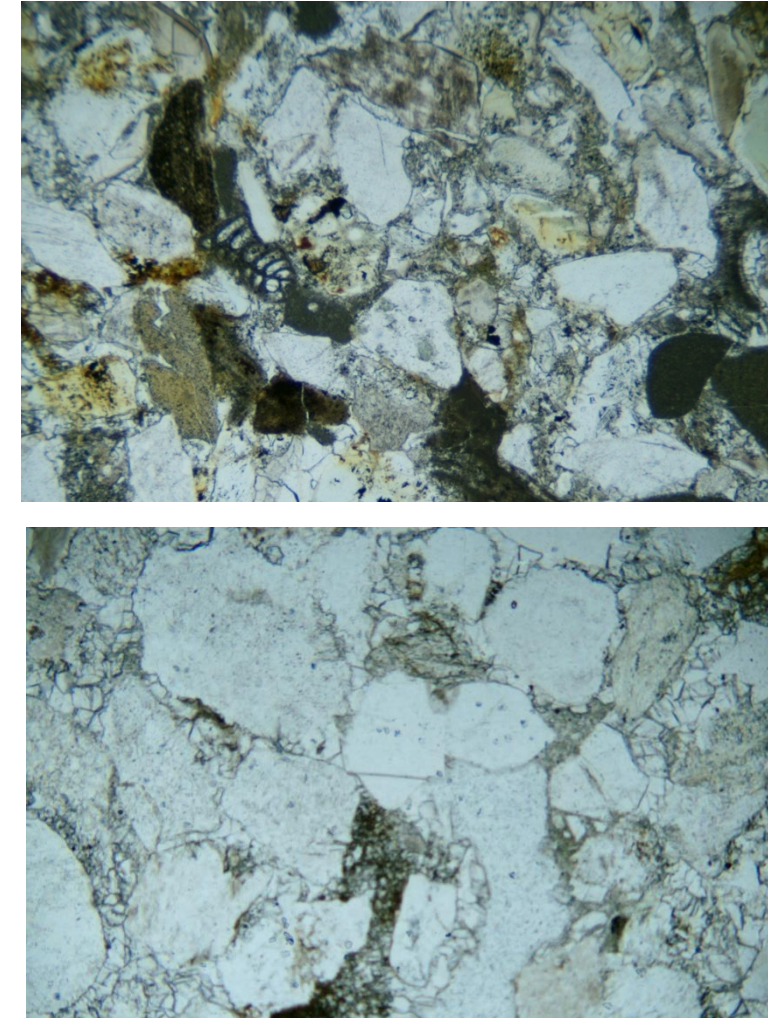
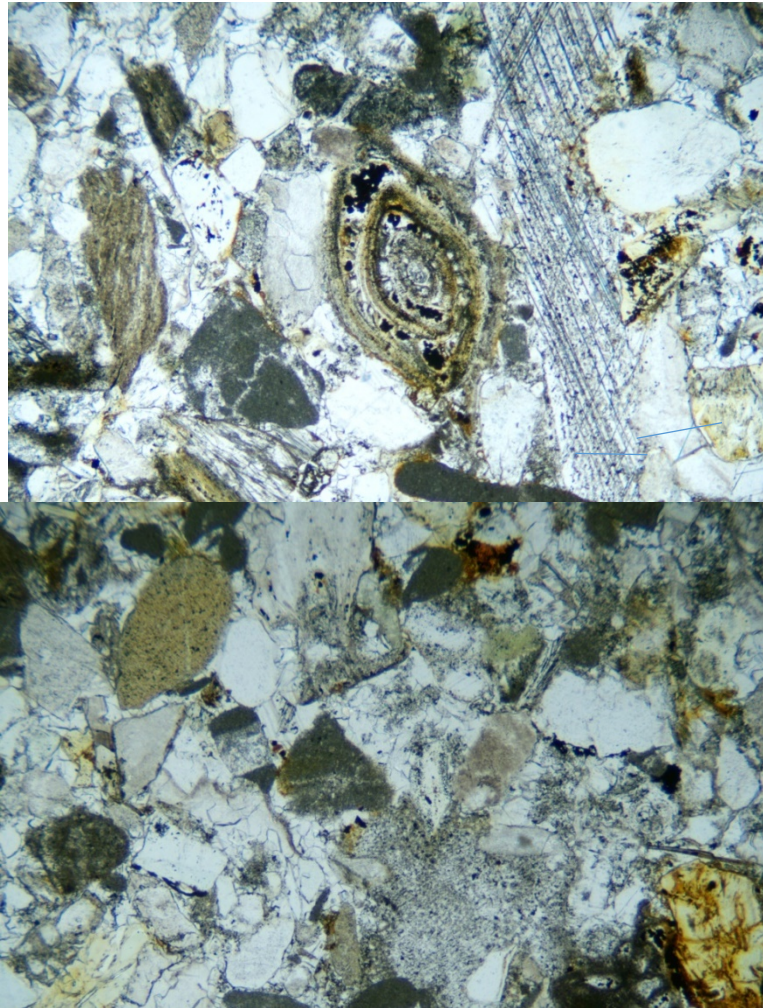
Santa Maria al Monte stone

Microscopic analysis

Vico Stone

From the comparison between the thin sections obtained from samples taken from the walls, in the case of the church of Santa Maria al Monte, and in the quarry in the case of the sandstone of Vico it is possible to notice a strong affinity between the two stones (the short side of the microphoto is 2,8 mm).

The both are fine-grained, with a discreet presence of centimetric voids, carbonatic cement and lithic fragment of very fine-grained quartzites, flints and limestones and bioclasts. Some lithoclasts show a diffuse limonite halo. The grains have a low degree of interpenetration and rounding.



Weathering

The durability tests (resistance to salt crystallisation, to ageing due to SO_2 action in the presence of humidity, to frost) carried out on Vico stone confirm its very low reaction to the attack of decay mechanisms.



In the picture, the specimen in the center is in its natural state while the others have undergone salt crystallization cycles and show no signs of degradation

The two churches have certainly undergone restorations which may also have affected the wall covering, but the sandstone of the Sanctuary does not show particular decay phenomena (in agreement with the lab tests), while the effects of weathering are quite evident in the sandstone of Santa Maria al Monte, even if the petrography indicates a good similarity between the two kind of stones.



Conclusions

The sandstone used for the internal and external coatings of the Sanctuary of Vicoforte and of many other ecclesiastical buildings in the southern Piedmont shows excellent characteristics from the point of view mechanical resistance and degradation mechanisms.

The sandstone used in the church of Santa Maria al Monte in Turin, although showing a remarkable similarity in the petrographic characteristics, is very weathered due probably to a higher percentage of carbonate component.

For this stone it was not possible to identify the quarry of origin from which to take samples for a thorough investigation.

The comparison between the thin sections of the two sandstones, however, confirms their belonging to similar depositional environments which are part , according to some authors, to the BTP: in fact the geological section of the Turin hill is characterized by formations coeval with those present in the Vicoforte area where it is located the quarry of the Vico stone.