In the field of Cultural Heritage, the safeguard of artworks contends new and complex problems linked not only to conservative condition, maintenance, etc. but also to the introduction of fakes and problems related to this aspects. In the last years, dating and authentication studies, mainly based on historical-artistic-stylistic researches, have been supported by scientific world through identification of artistic techniques and materials, underlining the important role of "dating pigments". The identification of this kind of pigments provides for in depth chemical-physical analysis, and, always more frequently, the contribute of microscopy can be fundamental, especially for artificial pigments in modern and contemporary artworks. In fact, if traditional chemical-physical analysis allows to recognize pigments, only studying the morphology of pigments' particles is possible to understand better their origin (natural or artificial, ancient or modern, etc.).

The present studies shows results obtained by researches carried out on Vase of Flowers, a painting attributed to Filippo De Pisis (1896-1956), important and renewed Italian artist (Fig. 1a). Some doubts about the authenticity of the expertise, which accompanies the artworks, increased suspicion related to the originality of artwork too.

The comparison between this artwork and other painting made by De Pisis, through preliminary analysis carried out by optical microscope on whole artwork, already showed different artistic techniques (Fig. 1b). Moreover, even if chemical analysis identified pigments belonging to De Pisis palette, such as White Titanium Oxide, more interesting results was obtained by SEM/EDS and µRaman, carried out on µsamples taken from original area (Fig. 1c): the identification of White Titanium Oxide particles (Rutile phase) with diameter less than 0.5 µm (Fig. 1d-e) suggests the use of pigment introduced on commerce in 1957, and so after death of artist [1-3]. Therefore, considering that pigments used in this artwork are not compatible with the period, the research suggests that the analyzed artwork could be a counterfeit painting [4], highlighting how chemical-physical analysis linked to microscopy studies could help in solving doubts about artistic attribution, also for contemporary artworks.

References

Acknowledgement: We would like to thank owner of artwork for the great availability and interest in this research and Prof. Leis Marilena (University of Ferrara, IT) for her kindly support.
Fig. 1: Vase of Flower (oil on wood), attributed to F. De Pisis: a) painting VIS investigation; b) microphotographs of brushstroke differently enriched in matter (OM, mag. 13.4 x); c) sample of White pigment; d) e) SEM/EDS analysis carried out on sample c) shows pigment particle which dimension are less than 0.5 µm.