

## **Study of Black Core, ceramic tile's defect, by a multi technique approach**

The traditional ceramic industrial production, for most of its applications, *i.e.* Ceramic Tiles, Heavy Clay Products, Tableware and Sanitaryware, is often affected by the formation, during the firing process, of a dark color core, normally named "Black Core", that can represent an aesthetical and technological problem.

The true nature of this defect was never clearly stated, but it is known to be due to the presence of chromophores, like Iron, and organic or reducing materials, combined with a lack of permeability of the unfired body.

A novel, multi-approach study was made by XRD, XRF, SEM-EDS, FTIR and Mossbauer Spectroscopy, and by micro Raman spectroscopy and mapping, with the aim to clarify the morphology, the composition and the Iron oxidation state of this inner layer.

Possible solutions were suggested, by the addition to the recipe of proper additives.