**Title: Archaeometric study of ancient ceramics**

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**Co-tutor(s): prof. Alberto De Bonis**

**Proposal**

The study of material culture provides important insights into the intercultural and socio-economic system in ancient times. Ceramic materials play a key role, as they have represented a variety of artifacts, from common ware and fine pottery to building materials. In archaeology, provenance studies of ceramics are fundamental for reconstructing the dynamics of circulation and commercial exchanges and, thus, contacts between the various cultures.

The mineralogical-petrographic approach in archaeometry makes it possible to better define the origin of the artifacts. As a matter of fact, being made with geological raw materials (clays and tempers), ceramics reflect the distinctive geological features of a specific territory. Furthermore, with the same analytical approach it is possible to obtain technological information on ancient firing dynamics by investigating the mineralogical and microstructural transformations that take place at different temperatures.

The DiSTAR research team has carried out several studies in close collaboration with archaeologists. These studies provided valuable information for the identification of the ancient workshops, on the circulation and technology of ceramics, especially in the most popular sites of the Campania region, including Pompeii, Cuma, Neapolis, Paestum, and many other regional sites. The research team also gained experience studying ceramics from different Italian sites and also abroad, such as Africa and Asia.

The research project aims at expanding this research by selecting ceramic artefacts of different types and functions from case studies of interest in close cooperation with the archaeologists responsible for the materials.

**Research Program**

A doctoral position will be applied for a candidate who can carry out research on a specific topic of archaeometric interest. The topic will be chosen among the most intriguing pending questions on archaeological pottery. The first part of the work programme will include the study of the available literature and a selection of pottery, following a strategy carefully planned with the expert archaeologist(s) responsible for the materials.

The analytical programme will be performed by using the instrumental facilities at the DiSTAR of the Federico II University, where the PhD student will have the possibility to acquire technical skills to autonomously carry out the routine analyses used for the characterization of archaeological ceramics. These include mineralogical, petrographic and methods, such as chemical analysis (XRF), mineralogical analysis (XRPD), polarised light and scanning electron microscopy (SEM) with microanalysis (EDS/WDS), and spectroscopic techniques (Raman, portable XRF) for non-destructive diagnostics. Furthermore, Sr-Nd isotope systematics will be applied to complete the analytical programme. This is a pioneering approach in ceramic archaeometry that has demonstrated to be a valid tool for fingerprinting the pottery and raw materials.

A period of about 4/5 months for a visiting fellowship abroad is also included in the work programme in order for the PhD student to learn different analytical methods and make useful discussion with other scholars, also to develop further one's career.

During the PhD research programme, training courses of the "Scuola di Dottorato" will be also available for the student at the DiSTAR, along with the possibility to attend external courses for improving knowledge on different topics.