

Materials Science and Technology Labs



Università degli Studi di Udine
Dipartimento Politecnico di Ingegneria ed Architettura

Labs activities

- Characterization and analysis of raw materials**
 - Characterization and analysis of inorganic waste**
 - Synthesis of materials**
 - Durability tests**
 - Processes development**
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Research fields

- **Ceramic powders preparation for the synthesis of high performances materials**
 - **Optimization of sintering processes**
 - **Development of traditional ceramics containing industrial and/or urban inorganic waste**
 - **Preparation of cement based materials containing industrial inorganic waste**
 - **Production of geopolymer based materials**
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Granulometric investigations

Tests on coarse granulated products:

Sieves

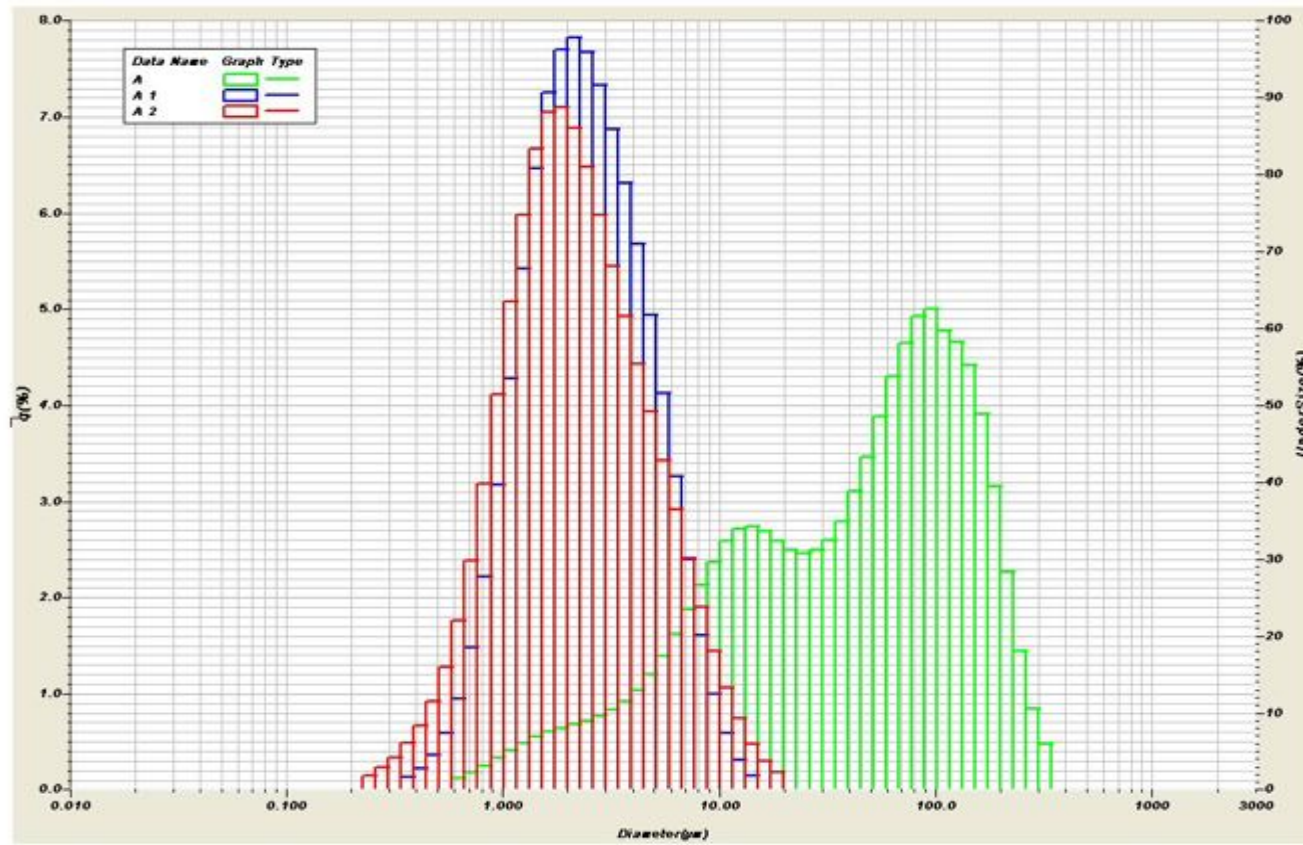


Granulometric analysis

Tests on powders: **Granulometer**

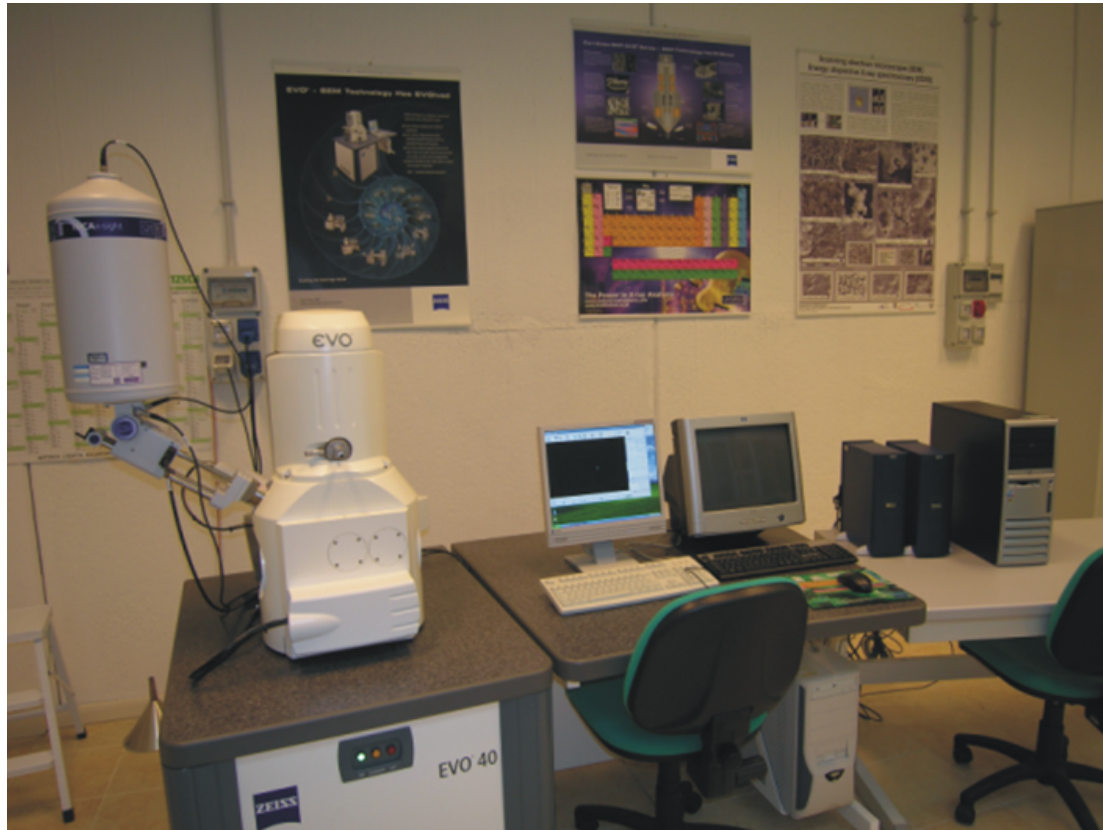


Results obtained on ZrO_2 / Y_2O_3 powders

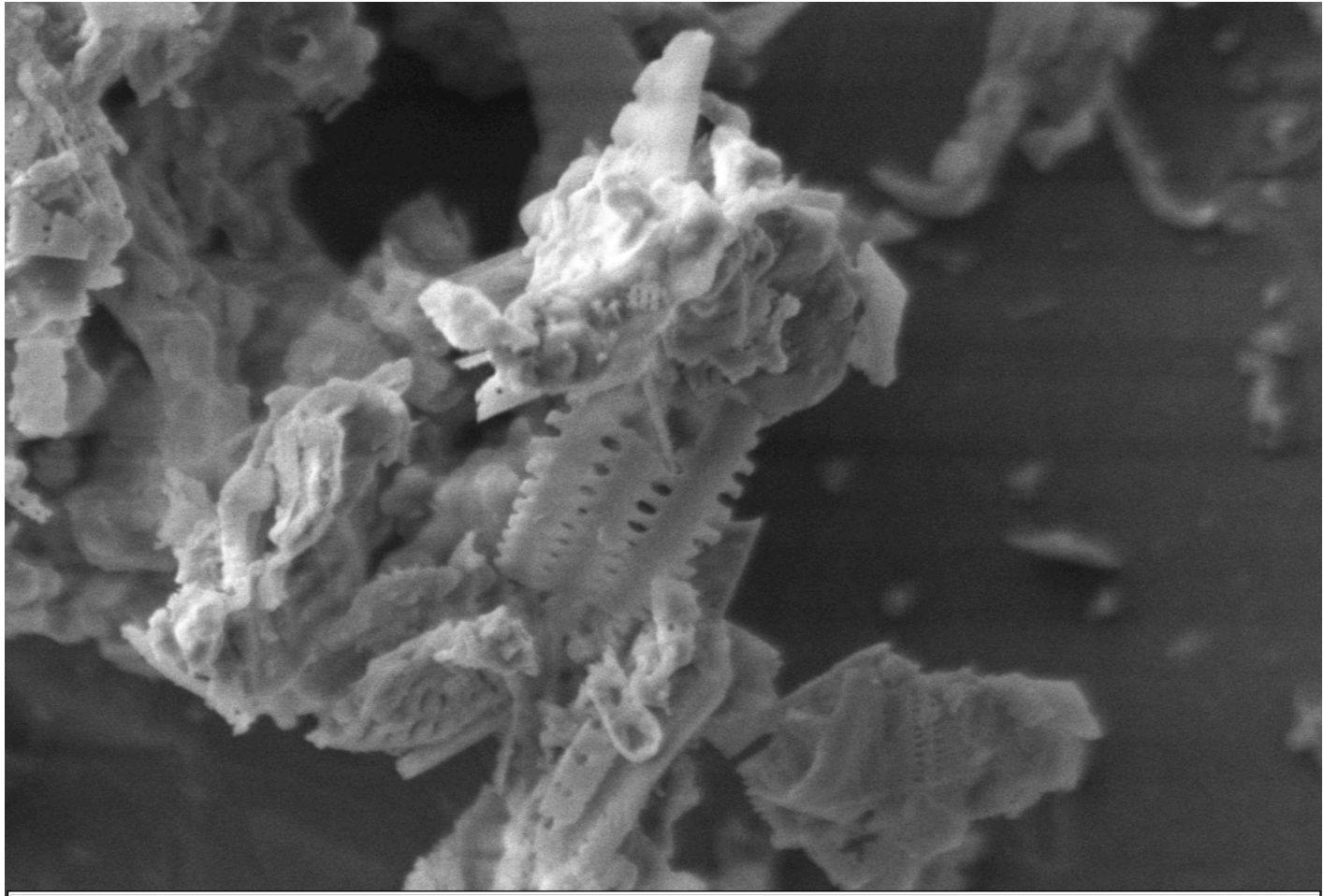


Electronic Microscopy

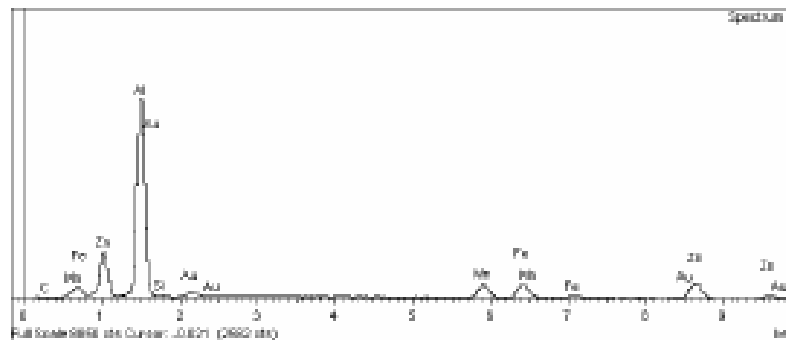
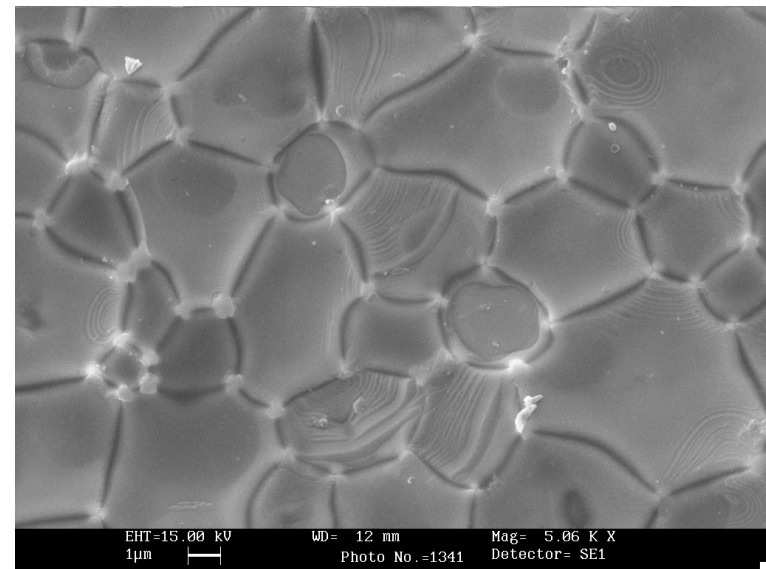
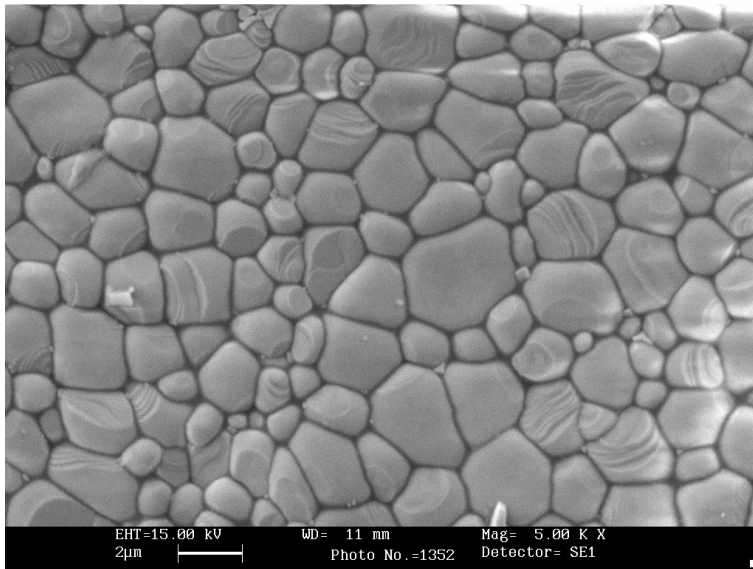
Microstructural analysis: **Scanning Electron Microscope (SEM-EXDS)**



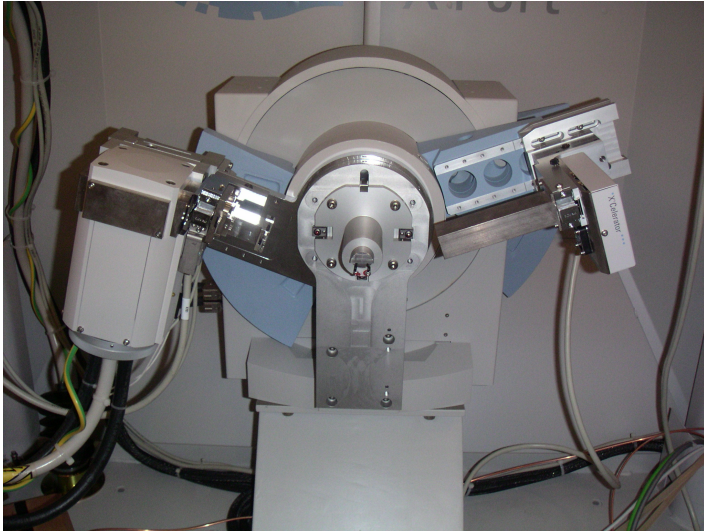
Morphological analysis of particles or agglomerates



Images of sintered $\text{ZrO}_2/\text{CeO}_2$ solid solutions



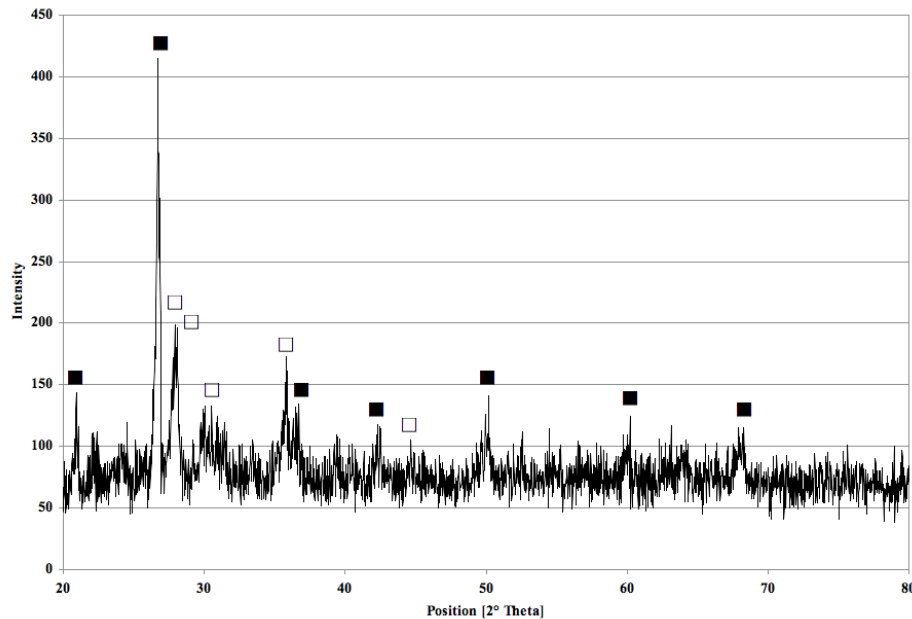
X-ray diffraction analysis (XRD)



Output: XRD Pattern

X-ray diffraction analysis (XRD)

XRD Pattern

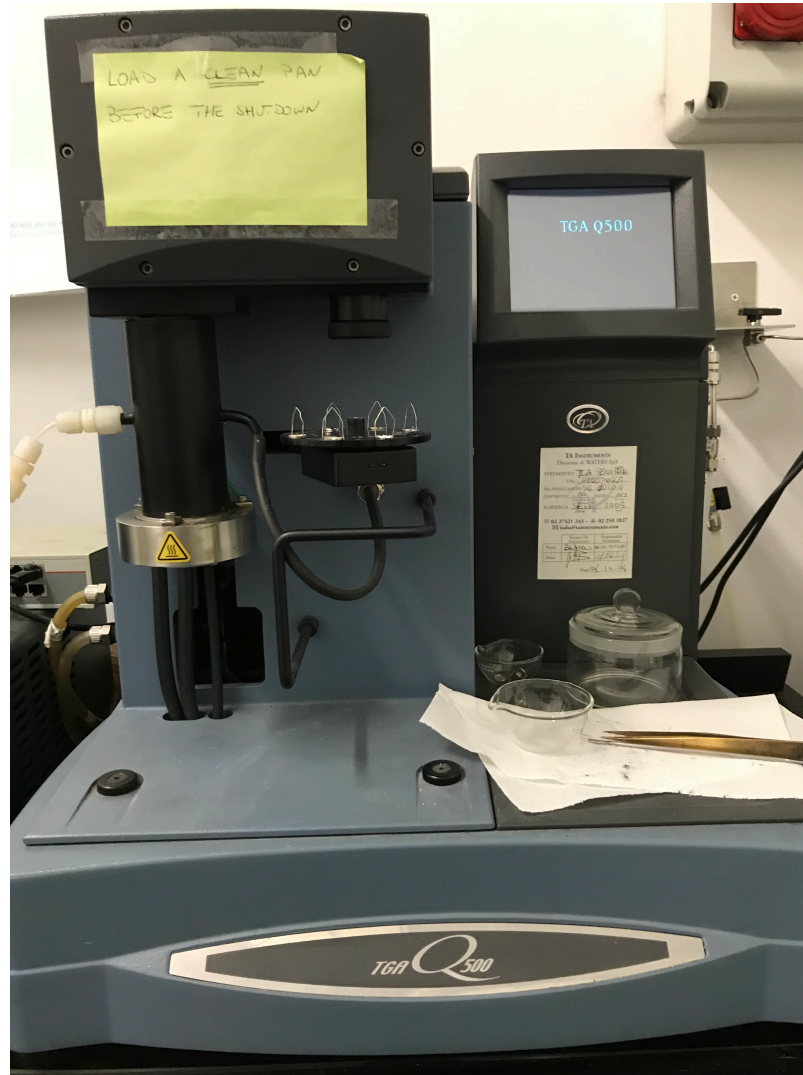


Crystallographic
Analysis

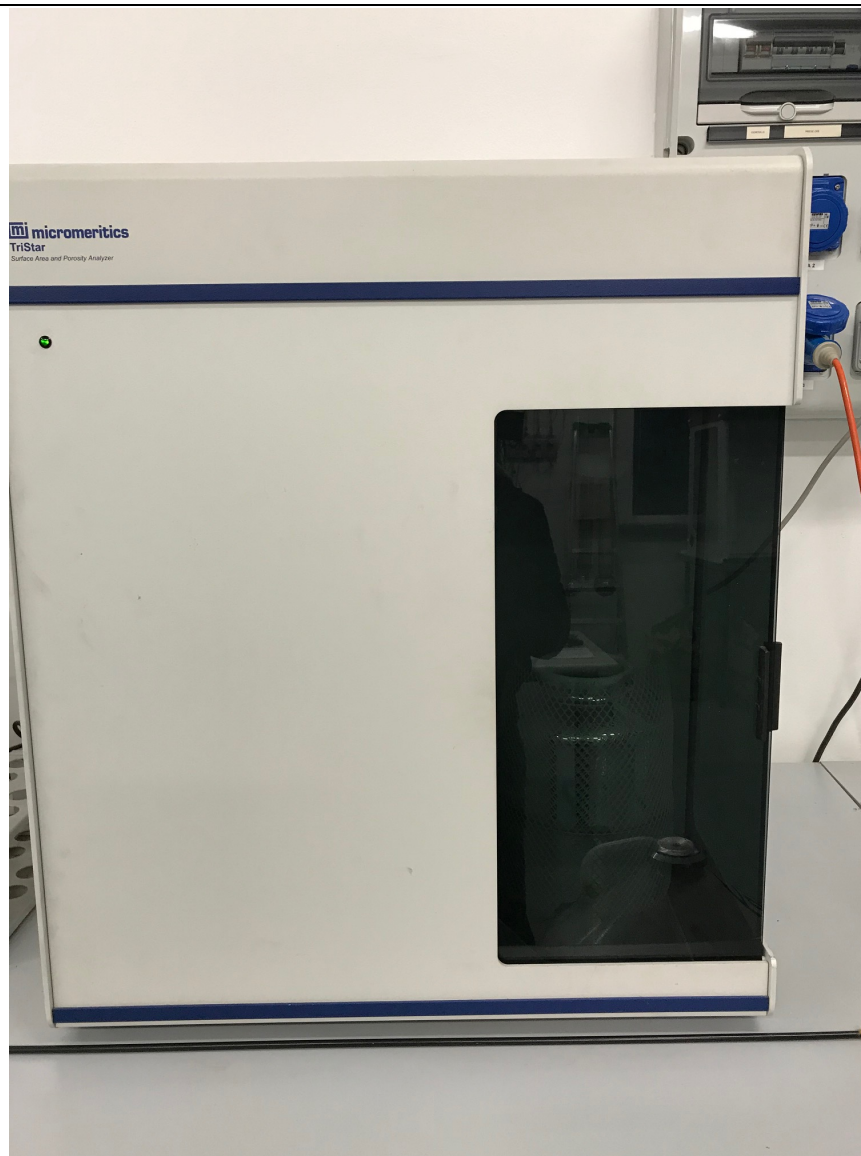


Mineralogical Composition

Thermogravimetric analysis



Specific surface area and porosity (BET)

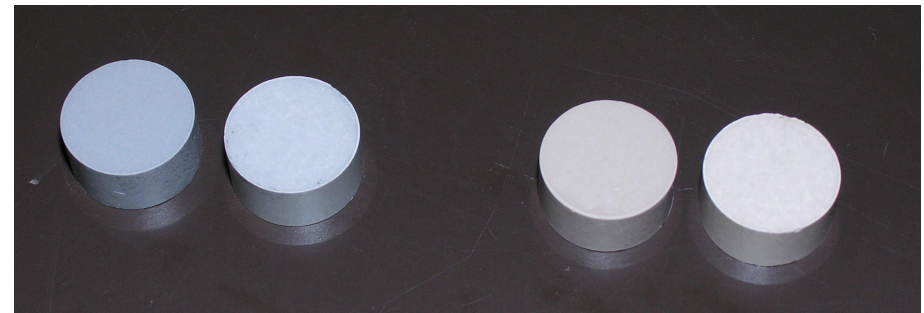
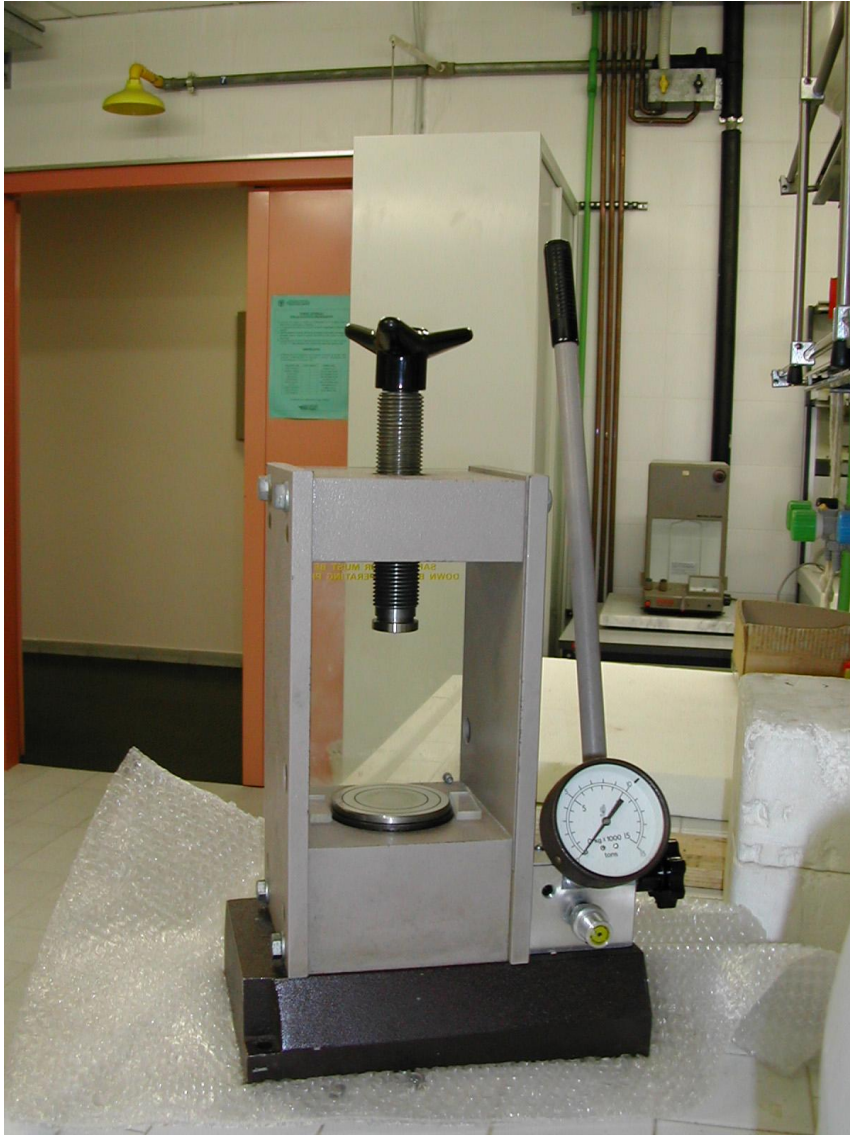


Accelerated aging

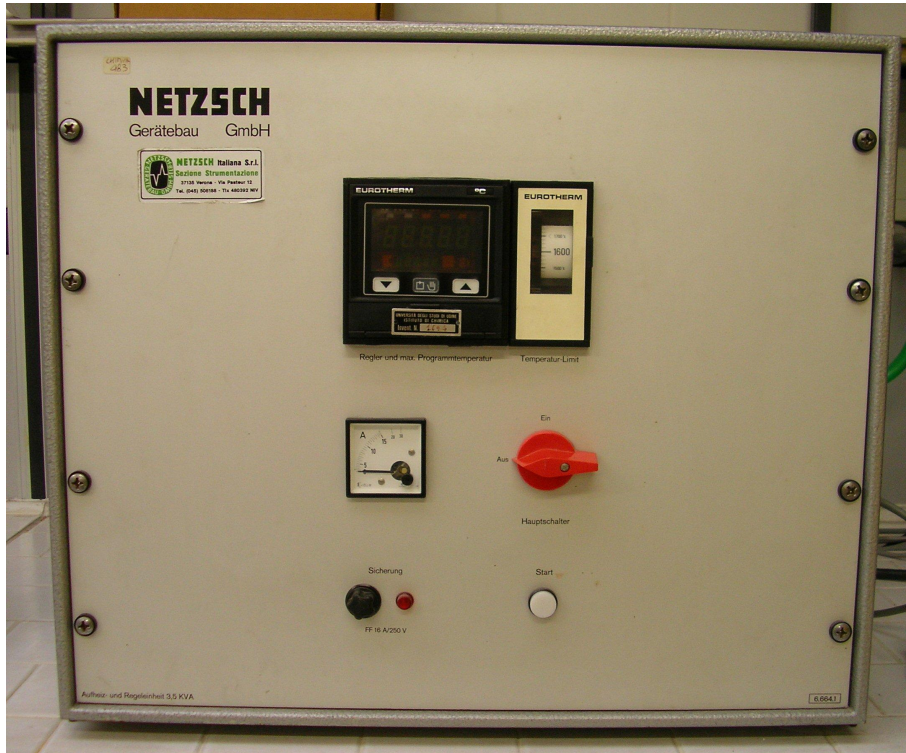
Climatic chamber



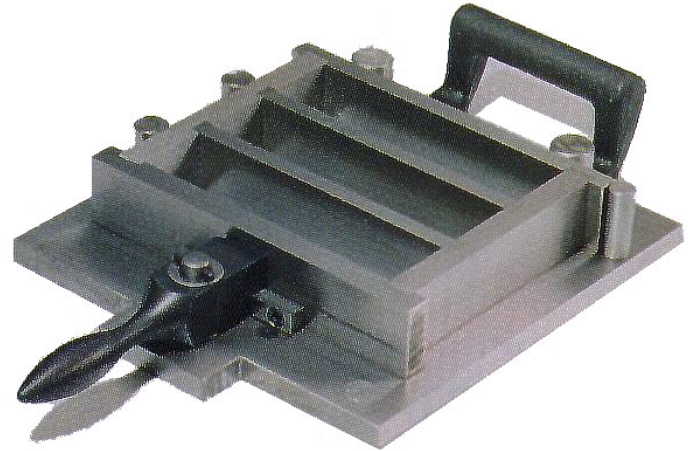
Pressing-forming



Sintering



Mortars preparation



Compressive strength tests on mortars and/or concretes

