



# PhD in CONSERVAZIONE DEI BENI ARCHITETTONICI / PRESERVATION OF THE ARCHITECTURAL HERITAGE - 37th cycle

**PON - GREEN Research Field: GREEN BINDERS AND PLASTERS FOR CONSERVATION  
AND REINFORCEMENT OF THE ARCHITECTURAL HERITAGE.**

Monthly net income of PhDscholarship (max 36 months)
<b>€ 1180.0</b>
In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
<b>Motivation and objectives of the research in this field</b>	The research starts from the need to develop products for the conservation of architectural heritage, in particular binders for mortars and plasters, in line with 'green' production systems and materials. Recently, manufacturers have started to carry out studies and research in this direction, particularly with regard to new buildings. It is urgent, however, to verify the actual compatibility of these products with the characteristics of the architectural heritage and the materials that compose it.
<b>Methods and techniques that will be developed and used to carry out the research</b>	The research aims at the study of NHL2, NHL3.5 and NHL5 natural hydraulic lime binders and their optimization and additives in order to create green products for applications in the conservative restoration of historical heritage. The products resulting from the research must be cement free. The development will concern the creation of mortars and injection mixes. Different formulations will be evaluated and analyzed from a chemical, physical and mechanical point of view. With its expertise and experience accumulated over 30 years of activity, TCS is now the ideal partner for architects, designers and engineers involved in new projects, in the latest generation of green building projects. The company contributes to the realization of modern biocompatible architectures as well as at recovery of the historical,



	<p>artistic and cultural heritage through state-of-the-art solutions with full compliance of the principles of sustainability, safety and well-being of man and the environment. The company offers product and solution characterized by a common philosophy: the careful selection of completely natural raw material, already used and known in the past, which, thanks to innovation and the excellence of modern technologies, contribute substantial value that allows the marriage of wellness and superior quality. With this in mind, the company chooses to use only eco-friendly natural raw materials, avoiding anything petrochemical in nature. Consequently, the raw materials which constitute the entire production are therefore pure natural limes, silica and carbonate sand, opus signinum and microspheres made of recycled glass, hemp, pumice and colored powders. These materials allow us to guarantee biocompatibility, durability, low consumption and high efficiency. Educational objectives The didactic objective is to provide the candidate</p>
<b>Educational objectives</b>	<p>The didactic objective is to provide the candidate with the technical and critical basis for the development of green products to be used in conservative restoration. Particular attention will be paid to the combination of green and compatibility. The use of green technologies often involves the partial use of waste or recycling materials that do not always find practical use in restoration. Therefore, the research is aimed at raising awareness of the green world with use in the common practice of restoration. During the research, direct on-site applications will be envisaged on historic buildings undergoing restoration to evaluate their real installation and functioning characteristics.</p>
<b>Job opportunities</b>	<p>Graduates of the PhD programme have often found employment in public sector and conservation institutions, as well as in professional practices and in the business world, in specific specialized fields. PhD candidates from abroad find job in their native countries at University or in Cultural Heritage Institutions. As regards Italy, the relationship with Italian Ministry of Cultural Heritage (Mibact), has been definitely fruitful, especially when we</p>



	consider that many among the best PhDs in Preservation of Architectural Heritage have been hired as officers and executives to the above ministry: recently (February 2018) twelve PhD from this Programme won the competitive exam to become public officers in the Ministry of Cultural Heritage and most of them are now responsible in prestigious seats.
<b>Composition of the research group</b>	11 Full Professors 13 Associated Professors 0 Assistant Professors 38 PhD Students
<b>Name of the research directors</b>	Cristina Tedeschi

<b>Contacts</b>	
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<b>Additional support - Financial aid per PhD student per year (gross amount)</b>	
<b>Housing - Foreign Students</b>	--
<b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>	--

<b>Scholarship Increase for a period abroad</b>	
<b>Amount monthly</b>	566.36 €
<b>By number of months</b>	0

<b>National Operational Program for Research and Innovation</b>	
<b>Company where the candidate will attend the stage (name and brief description)</b>	TCS srl
<b>By number of months at the company</b>	6
<b>Institution or company where the candidate will spend the period abroad (name and brief description)</b>	
<b>By number of months abroad</b>	0

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
<b>Educational activities (purchase of study books and material, funding for participation in</b>



**courses, summer schools, workshops and conferences):**

financial aid per PhD student per year ("DOTE"):

1st year: max 0 euro;

2nd year: **max 1.534,33 euros;**

3rd year: **max 1.534,33 euros**

**Computer availability:**

In the PhD room workstations for shared use are available, connected with the printer. All the PhD students can use their own laptop with the wireless connection.

Workstations and other equipment are available in the various laboratories linked with the doctoral program..