



# Programme



## HMC 2019. University of Navarra. Pamplona, 19<sup>th</sup>-21<sup>st</sup> June 2019

Tuesday, 18 <sup>th</sup>		Wednesday, 19 <sup>th</sup>		Thursday, 20 <sup>th</sup>			Friday, 21 <sup>st</sup>								
17.30-19.30	<b>Registration</b>  Hall of Science Library building	09.00-09.30	<b>Opening Session</b> Main Auditorium		09.00-11.00	T 13.2 Main auditorium	T 5.2 Amphitheatre Room 10	T 6.1 Room 21	09.00-11.00	T 7.2 Main auditorium	T 13.4 Amphitheatre Room 10	T 12.2 Room 21			
		09.30-11.00	<b>Inaugural Conference</b> Main Auditorium												
		11.00-11.30	<b>Coffee Break</b>		11.00-11.30	<b>Coffee Break</b>			11.00-11.30	<b>Coffee Break</b>					
		11.30-13.30	T 5.1 Main auditorium	T 11 Amphitheatre Room 10	11.30-13.30	T 3.1 Main auditorium	T 2 Amphitheatre Room 10	T 7.1 Room 21	11.30-12.30	T 4.2 Main Auditorium	T 3.2 Amphitheatre R 10	T 9.2 Room 21	13.00-13.30	<b>Closing Session</b> Main auditorium	
		13.30-15.00	<b>Lunch</b>		13.30-15.00	<b>Lunch</b>			13.30-15.00	<b>Lunch</b>					
		15.00-17.00	T 13.1 Main auditorium	T 1 Amphitheatre Room 10	15.00-17.00	T 9.1 Main auditorium	T 4.1 Amphitheatre Room 10	T 5.3 Room 21	15.00-15.30	<b>Bus to Olite</b>					
		17.00-17.30	<b>Coffee Break / Poster Tour</b>		17.00-17.30	<b>Coffee Break</b>			15.30-17.30	<b>Visit to the Castle of the Kings of Navarra and Church of S. María (XIIIth C.) in Olite</b>					
			17.30-18.00	<b>Workshop &amp; Exhibition</b>											
		17.30-18.30	T 10 Main auditorium	T 8 Amphitheatre Room 10	18.00-19.00	T 6.2 Main auditorium	T 13.3 Amphitheatre Room 10	T 12.1 Room 21	17.30-18.00	<b>Bus to Otazu</b>					
		19.30-20.30	<b>Technical visit:</b> Cloister of the Cathedral of Pamplona		20.00-23.00	<b>Guided visit to the Museum of the University of Navarra. Gala dinner</b>			18.00-21.30	<b>Visit to the Otazu Manor and the Bodega Otazu winery. Cocktail dinner</b>					
								21.30-22.00	<b>Bus to Pamplona</b>						

<b>T 1</b>	Topic 1:	Earth-based plasters and mortars on archaeology and historic constructions
<b>T 2</b>	Topic 2:	Use of nanotechnology for high performance mortars
<b>T 3</b>	Topic 3:	Gypsum-based plasters and mortars in historical constructions
<b>T 4</b>	Topic 4:	Functional mortars for the conservation of historic and modern cultural heritage structures
<b>T 5</b>	Topic 5:	Characterization of historic mortars and masonry structures. Sampling and test methods
<b>T 6</b>	Topic 6:	Historic production, processing and application of mortars, renders and grouts. Lime technologies
<b>T 7</b>	Topic 7:	Mortars in archaeological sites. Construction history. Archaeometry
<b>T 8</b>	Topic 8:	Dating of historic mortars
<b>T 9</b>	Topic 9:	Natural and Roman cement mortars
<b>T 10</b>	Topic 10:	Conservation issues concerning mortars, plasters, renders and grouts. Diagnosis. Decay and damage mechanisms
<b>T 11</b>	Topic 11:	Conservation issues: Case studies
<b>T 12</b>	Topic 12:	Preservation. Consolidation materials and techniques. Development of new products. Preventive conservation
<b>T 13</b>	Topic 13:	Repair mortars and grouts. Requirements and design. Compatibility issues. Durability and effectiveness. Repair mortars: Adequacy of testing procedures

## Tuesday, 18<sup>th</sup> June

17.30-19.30 **Registration** (Hall of Science Library building)

## Wednesday, 19<sup>th</sup> June

09.00-09.30 **Opening Session** (Auditorium)

09.30-11.00 **Inaugural Conference** (Auditorium)

**Historic mortars of the Holy Aedicule and the Tomb of Christ supporting the design and evaluation of performing and compatible restoration mortars and revealing the history of the monument**

**Antonia Moropoulou et al. National Technical University of Athens, Greece**

11.00-11.30 **Coffee Break**

11.30-13.30	Topic 5.1 (Auditorium)	Topic 11 (Amphitheatre)
11.30	A map is worth a thousand pictures: The application of FTIR-mapping to the analysis of petrographic thin sections of historical and experimental mortar	Medieval mortars and masonry in Hamar bishopric Norway: research, conservation and authenticity
11.45	Aggregates of Roman plaster (Lombardy, Italy): calcite powder or quartz powder?	Evolution of mortars composition and characteristics during the 20 <sup>th</sup> century – The study of buildings awarded with Valmor Prize for Architecture in Portugal
12.00	Characterisation techniques for lime based materials – a case study of the Rajagopuram of Pundarikaksha temple in Tamil Nadu, India	Petrographic characterization of lime mortars of the bisonto-Roman ruins, case study of the antique Bône city, Algeria.
12.15	Characterisation of concrete structures along the Reschen frontier, South Tyrol, Italy	The Restoration of the church of Our Lady of the Assumption Daus, Bohol, Philippines
12.30	Study of the conservation state and building materials of the defensive constructions of Southeast Spain: the example of Mula's castle in Murcia	Practical application of lime-pozzolan mortars to damp masonry
12.45	Properties of binders of Roman mortars	The analysis of the proportion of mortar for Japanese roof tile (Ibushikawara) in Taiwan by applying of Taguchi Method
13.00	Provenance study of raw materials used for lime making at Prague Castle during Medieval times	Characterization of mortar samples from York Minster (York, UK)
13.15	Interpretation of scientific data derived from analytical techniques used in the characterisation of Roman mortars	Digital image analysis as basic for the evaluation of mortars in architectural conservation

13.30-15.00 **Buffet Lunch**

Wednesday, 19<sup>th</sup> June 2019

15.00-17.00	Topic 13.1 (Auditorium)	Topic 1 (Amphitheatre)
15.00	Characterization and compatibility assessment of commercial stone repair mortars	Earth-based plasters – the effect of anhydrite stabilization.
15.15	Improvements to water and freeze-thaw resistance of historic mortar replication mixes	Similar appearance of mortar and brick masses in Algiers Casbah houses during the Ottoman period (16 <sup>th</sup> - early 18 <sup>th</sup> centuries)
15.30	Use of ultrafine mafic rocks for the enhancement of carbonation reaction in lime renders	Assessment of adhesive strength of an earth plaster on different substrates through different methods
15.45	The impact of elevated temperatures at the properties of lime-based mortars	Earth-based plasters – the influence of clay mineralogy
16.00	Evaluation of resistance to salts of lime mortars produced with mineral additions	Earth-based and binder-based mortars comparison
16.15	A grout and mortar system for fine cracks and shallow surfaces fills in marble	Earth-based and current plasters: assessment of efficiency and contribution to indoor air quality
16.30	An innovative way for testing adhesion of non-structural injection grouts for the stabilisation of historic plasters	Earthen plasters based on illitic clayish earth – the influence of calcitic lime addition
16.45		Rescuing the manufacturing process of traditional mortars present on XIX-century earthen buildings in Brazil

### 17.00-17.30 Coffee Break & Poster Tour

17.00-17.30	POSTERS (Hall of the Auditorium)	Topic
	Macroscopic high resolution techniques to the characterization of the mortars structures in the Sé-Cathedral's archaeological complex in Idanha-a-Velha (Portugal)	T 1
	Roman mortars of floor substrates and walls from Arroyo de la Dehesa de Velasco site (Burgo de Osma, Soria, Spain): petrographic and mineralogical characterization	T 5
	Petrographic and chemical-mineralogical characterization of plaster and mortar from the Renaissance cistern at Amaiur Castle (Navarre, Spain)	T 7
	Towards an integrated approach to mortar analysis - The Pompei Arch&Lab Project	T 11
	Calcium alkoxide as an innovative product to consolidate cracks in cement mortars	T 12

17.30-18.30	Topic 10 (Auditorium)	Topic 8 (Amphitheatre)
17.30	Decorative renders simulating stone of middle 20 <sup>th</sup> century in the region of Lisbon	Characterization and Radiocarbon dating of complex mortars in Historic Buildings
17.45	The Monumental UNESCO site of Panamá Viejo: investigation of the masonry mortars	Structural characterization and thermal decomposition of lime binders allow accurate radiocarbon age determinations
18.00	Medieval mortar, stone and repair mortar of an abandoned Medieval Church, compatibility issues: example from Hungary	The latest advances on Single grain OSL dating of mortars and their integration in early medieval archaeology

### 19.30-20.30 Technical visit: Cloister of the Cathedral of Pamplona

## Thursday, 20<sup>th</sup> June

09.00-11.00	Topic 13.2 (Auditorium)	Topic 5.2 (Amphitheatre)	Topic 6.1 (Room 21)
09.00	Impact of guar gum and chitosan ethers on physico-mechanical properties and durability of natural hydraulic lime mortars	Roman vs. medieval crushed brick lime mortars: A comparative study	Hot Applied Lime Mortar: Research into the historical technique of "Heiße Speis" and its use for render and grouts
09.15	Lime-based grouts for architectural surface repair. Comparison of their performance by using laboratory and field test methods	Conservation of historical colours in urban landscapes. Case of study: Las Palmas de Gran Canaria city	Blast furnace slag in historic mortars from Bergslagen Sweden
09.30	Evaluation of the fresh state properties of lime-based grouts through round robin testing	Characterization of historical mortars from the Portuguese Citadel in Ksar Seghir (Morocco)	Marmorite - A traditional wall-coating technique
09.45	Lime based mortars. Relationships between composition parameters and mechanical strength	Analytical and chromatic characterization of the interior walls finishes in the Batlló House of Gaudí in Barcelona. A surprising discovery	Ancient mortar recipes, nowadays conservation
10.00	Lime-pozzolan injection grouts with ovalbumin and ethanol added as water-reducing agents: grout design and assessment of the mineralogical evolution	Mineralogical characterization of historical cement-based mortar from Rupnik military fortification line	Study of lime mortar and chamotte for the interior lining of the 18 <sup>th</sup> century cistern at Es Mercadal, Menorca
10.15	Microstructure of lime pastes with the addition of vegetable oils	Characterization of the Roman mortars of the pool of Guelma	Research on potential raw material sources for dolomitic lime mortars at St John convent at Müstair, Switzerland
10.30	Effects of natural zeolite addition to lime based render layers for restoration of historical buildings	Technological characterization of the mortars of House of Rui Barbosa Museum facades	Pozzolanicity beyond Vitruvius: insights into the exploitation of reactive silicates throughout the Roman world
10.45		Algarve vernacular architecture facade ornaments: chemical, physical and mechanical characterization	Composition and Technology of the 17 <sup>th</sup> Century Stucco Decorations at Červená Lhota Castle in the Southern Bohemia

### 11.00-11.30 Coffee Break

11.30-13.30	Topic 3.1 (Auditorium)	Topic 2 (Amphitheatre)	Topic 7.1 (Room 21)
11.30	Stucco marble in the Portuguese architecture: Mineralogical, physical and mechanical properties	Enhancing clay mortars' properties	A technical analysis on materials and characteristics of mortar-based compounds in Roman Aquileia (Udine, Italy) through over six centuries
11.45	Detailed studies of gypsum renders and plasters from the Ishrat Khane Mausoleum in Samarkand, Uzbekistan	Active photocatalytic-superhydrophobic coating with TiO <sub>2</sub> -ZnO nano-heterostructures for lime mortars	M.N.I.A.R. techniques of macroscopic characterization from the colorimetry and chromatographies analysis applied to the mortars in the archaeological site of Los Hitos (Arisgotas, Toledo, Spain)
12.00	Historic gypsum mortars from Emilia Romagna (Italy). Mineralogical and petrographic analysis	Evaluation of SiO <sub>2</sub> nanoparticles as additive for lime mortars: changes in the microstructure and mechanical properties	Insights into Carolingian construction techniques – results from archaeological and mineralogical studies at Münstair Monastery, Grisons, Switzerland
12.15	The use of stucco-marble to restore veined polished limestone. The case of the pavement in the major sacristy of the Cathedral of Seville.	Evaluation of the influence of nano-SiO <sub>2</sub> and nano-Al <sub>2</sub> O <sub>3</sub> in physico-mechanical properties and microstructure of calcareous clay	Fernandina old fortress of Lisbon – contribution to its preservation
12.30	Thermal monitoring of a traditional gypsum oven in Ribera d'Ondara (Lleida) and simulation of the calcination process	Studies of the mechanical properties of lime mortars treated with alkaline earth hydroxide nanoparticles	Analysis of mortars from the Tarragona Roman Aqueduct as a study case to document original building and restoration materials
12.45	Figural Renaissance stucco in the Czech Republic – Technological and material characterisation	Synthesis of nanolime in sugary solutions	Characterisation of Roman Mortar from the Archaeological Site of Mirobriga
13.00		The use of nanoparticle admixtures to improve the performance of restoration mortars	Animal, vegetable or mineral? Characterising shell-lime, maerl-lime and limestone-lime mortar evidence from the Late Norse and Medieval site of Tuquoy, Orkney
13.15		Study of the role of different nanoparticles in lime pastes	Characterization of historical mortars from the Botanic Garden of the National Palace of Queluz

**13.30-15.00 Buffet Lunch**

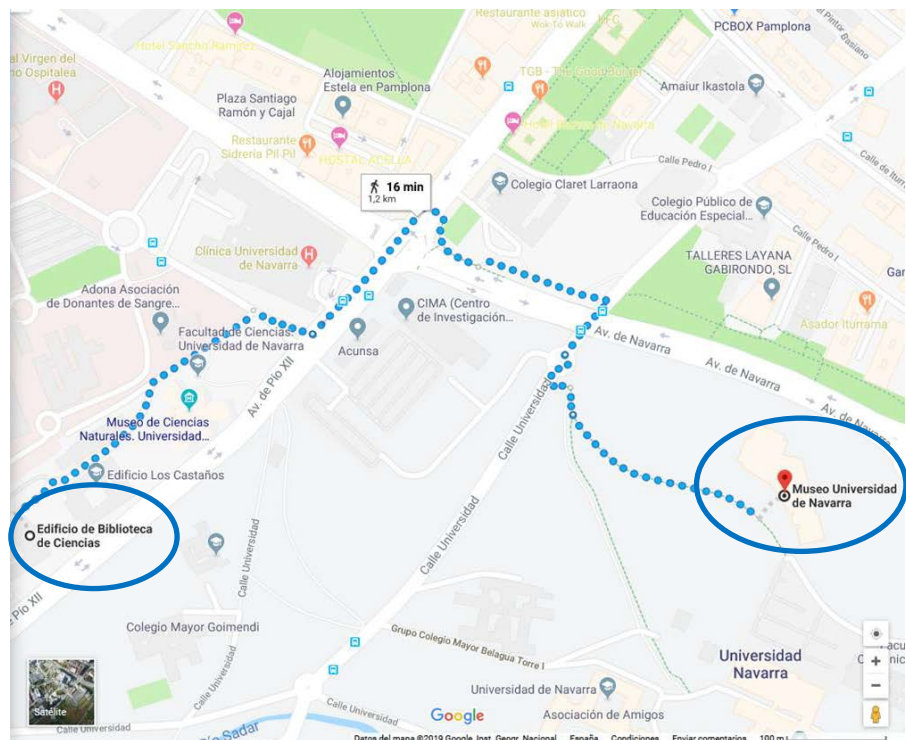
<b>15.00-17.00</b>	<b>Topic 9.1 (Auditorium)</b>	<b>Topic 4.1 (Amphitheatre)</b>	<b>Topic 5.3 (Room 21)</b>
15.00	European natural cements - their key technical properties under standardised conditions	Hydrophobized lime grouts prepared with microsilica and superplasticizers	Petrography of Historic Mortar Materials: Polarising Light Microscopy as a Method for Characterising Lime-Based Mortars
15.15	From marlstone to rotary kilns – the early development of Portland cement	Self-cleaning of historic mortars with multi-functional coatings	16 <sup>th</sup> century decorative elements in the Convento dos Capuchos (Serra de Sintra, Portugal)
15.30	Drying Shrinkage of Historic Portland Cements: Factors to be Considered for Successful Repair	Use of natural zeolite aggregate in restoration lime renders	Colors and grains: study on the composition and characteristics of mortars of the 18th and 19 <sup>th</sup> centuries in São Luís, Maranhão – Brazil
15.45	Techniques of restoration using 1930's Portland cements at Porte de l'Est Avenicum, Switzerland	Addressing safety and durability requirements of architectural heritage by developing functional conservation mortars	DB-Heritage: A database of mortars composition and characteristics
16.00	Combining Roman, Natural and Portland Cements for Historic Concrete Repairs at Gateway National Recreation Area, New York	Autogenic vs. autonomic self-healing process in conservation mortars with crystalline admixture	Prototyping an Early Modern Mortar Database for the American South
16.15	The use of mortars in Palau Guell by Antoni Gaudi	Lime-based rendering mortars with photocatalytic and hydrophobic agents: assessment of the water repellency and biocide effect	Roman, medieval and modern mortars in the Walloon Region (Belgium). Results and perspectives.
16.30	Methodology of identification of natural and historic Portland cements. Application and study in mortars of Madrid and Barcelona	SRG composite systems for strengthening masonry structures: from laboratory to field applications	Hydraulic mortars at Caesarea: underwater and on-land pozzolanic reactions through chemical and mineralogical examinations of Herodian, Roman, and Byzantine constructions
16.45		Improving of the biocide properties of restoration mortars by using inorganic substrates	Characterization of Lime Mortar from a Tabique Pampango Wall Technique in the Philippines

**17.00-17.30 Coffee Break****17.30-18.00 Workshop & Exhibition**



18.00-19.00	Topic 6.2 (Auditorium)	Topic 13.3 (Amphitheatre)	Topic 12.1 (Room 21)
18.00	Hot applied lime mortar – assessment of a traditional technique used in modern restoration	Reproducibility and efficiency of field test methods for evaluation of non-structural injection grouts	Comparative analysis of permeability values of aerial lime mortars for preventive conservation
18.15	Stucco techniques in the vernacular architecture of the Algarve (18-20 <sup>th</sup> Centuries)	Influence of adding of natural cement on the characteristics of air lime mortars composition	Comparative study of ethyl silicate versus acrylic resin consolidation of a salt-loaded wall painting with high water content: a case study at the Chapter Hall of Chartres cathedral (France)
18.30	Stucco ornaments and colour in architectural surfaces of southern Portugal	Evaluation of the rheological behaviour of a natural additive of vegetal origin in restoration lime mortars as an ecological and sustainable alternative	Preliminary results on the use of ammonium phosphate solutions for the consolidation of lime-based mortars
18.45	Mortars and renders from Roman villa Horta da Torre (Portugal): a multi-analytical approach	Diethyl oxalate-based microgrouts in calcium carbonate systems: formulation, field testing and mineralogical characterisation	The rehabilitation of the old buildings in Algeria: techniques and methods

**20.00-23.00 Guided visit to the MUN. Gala dinner**



## Friday, 21<sup>st</sup> June

09.00-11.00	Topic 7.2 (Auditorium)	Topic 13.4 (Amphitheatre)	Topic 12.2 (Room 21)
09.00	Analysis of mortars from the Church of St. Sergius and Bacchus at Umm as-Surab (Jordan)	Enhanced Pozzolanic Mortars for masonry unity	The effect of crushed brick to the behavior of air lime mortars composition
09.15	Characterization of Historic Mortar Samples for Period Analysis and Determination of Intervention Mortars: A Case Study	Comparative analysis of the mechanical properties and workability of lime mortars: examples from Hungary and Cyprus	The effect of metakaolin on the properties of air lime mortar composition
09.30	Microbiological diversity of the historic complex "The Lost Wawel" of Wawel Royal Castle in Krakow, Poland	Hydraulic-lime-limestone repair mortars for historic and traditional fabrics	Frost resistance of reproduced mosaic mortars
09.45	Characterization of historic mortars from Jerash Archaeological Site in Jordan	Investigating differences in the performance of lime-based mortars	Rehabilitation of the old buildings in Algeria: techniques and methods
10.00	Design of conservation mortars for a historic palimpsest: the case of Kalapodi, Phthiotis, Greece	Influence of the substrate on the mechanical characteristics of the applied mortars	Highly transparent TiO <sub>2</sub> -SiO <sub>2</sub> layers for cultural heritage preservation
10.15	Geoarchaeological, archaeobotanical and radiocarbon analysis of medieval masonry materials: A palaeo-environmental buildings archaeology of Lochindorb Castle, Scotland.	Characterization of restorative mortars for application in the Pasargadae World Heritage site	Coatings in the conservation of built heritage with earth in Santiago de Chile
10.30	Monitoring of bio-aerosols, gaseous and Particulate Matter (PM) pollution and microbiological contamination of stones and mortars of the reserve "The Lost Wawel" of Wawel Royal Castle in Cracow, Poland	Impact of aggregates on fresh mortars' properties	Black pigmentation by fungi in Romanic churches' wall paintings in Northern Portugal (15 <sup>th</sup> and 16 <sup>th</sup> century). Challenges and strategies of preventive conservation in places of worship
10.45	Characterization and durability analysis of coral stones in a marine environment	Formulated lime mortars as a sustainable practice for built heritage conservation in Mexico	Integration of Historic Districts in Modern Cities within Sustainable Perspectives

### 11.00-11.30 Coffee Break

11.30-12.45	Topic 4.2 (Auditorium)	Topic 3.2 (Amphitheatre)	Topic 9.2 (Room 21)
11.30	Fibre reinforced mortars	Study of properties of gypsum plasters of Araripe's pole for application in restoration mortars	From lime to cement. Historic binders in Catalonia
11.45	Self-healing lime-based mortars using biological mechanisms and microvascular networks	Mud and Gypsum mortars used during Antiquity in Cyprus	Evaluation of the historic mortars of the museum of natural sciences of the city of La Plata, Argentina
12.00	Comparative evaluation of the morphological and rheological characteristics of nanolime dispersions for the consolidation of architectural monuments	Physical- Mechanical Comparison of the traditional gypsum of Albarracín (Teruel) and Pallars (Lleida)	Mineralogical-petrographic characterization of terrazzo from selected 20 <sup>th</sup> century monuments (Ljubljana, Slovenia)
12.15	Optimisation of the thermal performance of lime-based mortars using Phase Change Materials	Characterisation of Gypsum Renders in the Paris Region and Determination of the Traditional Fabrication Process	When natural cement induces Portland cement decays
12.30	Photoactive Fe-TiO <sub>2</sub> Lime Plasters for Building Protection		

**13.00-13.30 Closing Session (Auditorium)**

**13.30-15.00 Buffet Lunch**

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**15.00-15.30 Bus to Olite**

**15.30-17.30 Visit to the Castle of the Kings of Navarra and Church of Santa María (13<sup>th</sup> Century) in Olite**

**17.30-18.00 Bus to Otazu**

**18.00-21.30 Visit to Otazu Manor and Bodega Otazu winery. Cellar dinner**

**21.30-22.00 Bus to Pamplona**

## Venue of 5<sup>th</sup> HMC 2019. Science Library Building



## Walking route to the Cathedral from the venue

