

Nanomatch



**NANO-SYSTEMS FOR THE CONSERVATION OF IMMOVEABLE AND MOVEABLE POLYMATERIAL CULTURAL HERITAGE IN A CHANGING ENVIRONMENT**

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WWW.NANOMATCH-PROJECT.EU

**SYNTHESIS OF METAL ALKOXIDES**

DEVELOPMENT OF TWO ALKOXIDE CONSOLIDANT PRECURSORS:

- EVOLVING TO **NANO-STRUCTURED ADHESIVE COATINGS**
- COMPATIBLE** WITH THE MAIN MATERIALS USED IN HISTORIC BUILT HERITAGE
- ENSURING **ENHANCED SUSTAINABILITY, DURABILITY AND EFFICIENCY** COMPARED TO CONVENTIONAL CONSERVATION PRODUCTS

FOR THE CONSERVATION OF STONE AND WOOD:

**CALCIUM ALKOXIDE** PRECURSORS OF CORRESPONDING CARBOHYDRATES

FOR THE CONSERVATION OF GLASS:

**ALUMINIUM ALKOXIDE** PRECURSOR OF  $Al_2O_3$  (DEVELOPED IN EU PROJECT CONSTGLASS)

PERFORMANCE ASSESSMENT IN LABORATORY

STONE SUBSTRATES: **DARKARA MARBLE, LAVONNIERES LIMESTONE, MAASTRICHT LIMESTONE**

STONE LIKE SUBSTRATES: **LIME MORTAR WALL PAINTING, REPLICA WITH FRESCO / EGG BINDER / OIL BINDER PAINT LAYER AND THREE DIFFERENT SETS OF FISHERIES**

WOODEN SUBSTRATES: **PINE, POPLAR, LINDEN**

GLASS SUBSTRATES: **MODEL**

PERFORMANCE ASSESSMENT OF MODEL SAMPLES WITH AND WITHOUT ARTIFICIAL AGEING IN COMPARISON TO COMMERCIAL PRODUCTS IN TERMS OF **CONSOLIDATION AND BIDDIE EFFECT**

**PERFORMANCE ASSESSMENT IN FIELD**

S. CROCE CATHEDRAL FIRENZE (ITALY)

STAVROPOLOU MONASTERY BUCHAREST (ROMANIA)

COLOGNE CATHEDRAL (GERMANY)

OVIEDO CATHEDRAL (SPAIN)

PERFORMANCE ASSESSMENT OF MODEL SAMPLES IN COMPARISON TO COMMERCIAL PRODUCTS IN TERMS OF **CONSOLIDATION EFFECT**

PERFORMANCE ASSESSMENT OF HISTORICAL SAMPLES

**RISK ASSESSMENT & MARKET UP-SCALING**

**RISK ASSESSMENT FOR HEALTH & ENVIRONMENT IN RELATION TO:**

- TOXICITY OF METAL ALKOXIDE SOLS AND SOLUTIONS
- NANO-PARTICLES EXPOSURE
- PRODUCTION OF:
- MATERIAL SAFETY DATA SHEET (MSDS)

**INDUSTRIAL UP-SCALING: FROM LAB SCALE TO PILOT PLANT**

LAB SCALE PRODUCTION (100 TO 1000g METALLIC CALCIUM)

PILOT UP-SCALE BOTTLE-SCALE (1 TO 100g METALLIC CALCIUM)

INDUSTRIAL UP-SCALE (UP TO 3000g METALLIC CALCIUM)

**COSTS/BENEFITS ANALYSIS**

**MARKET RISK ASSESSMENT**

**BUSINESS PLAN**

**PARTNERS**

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