

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

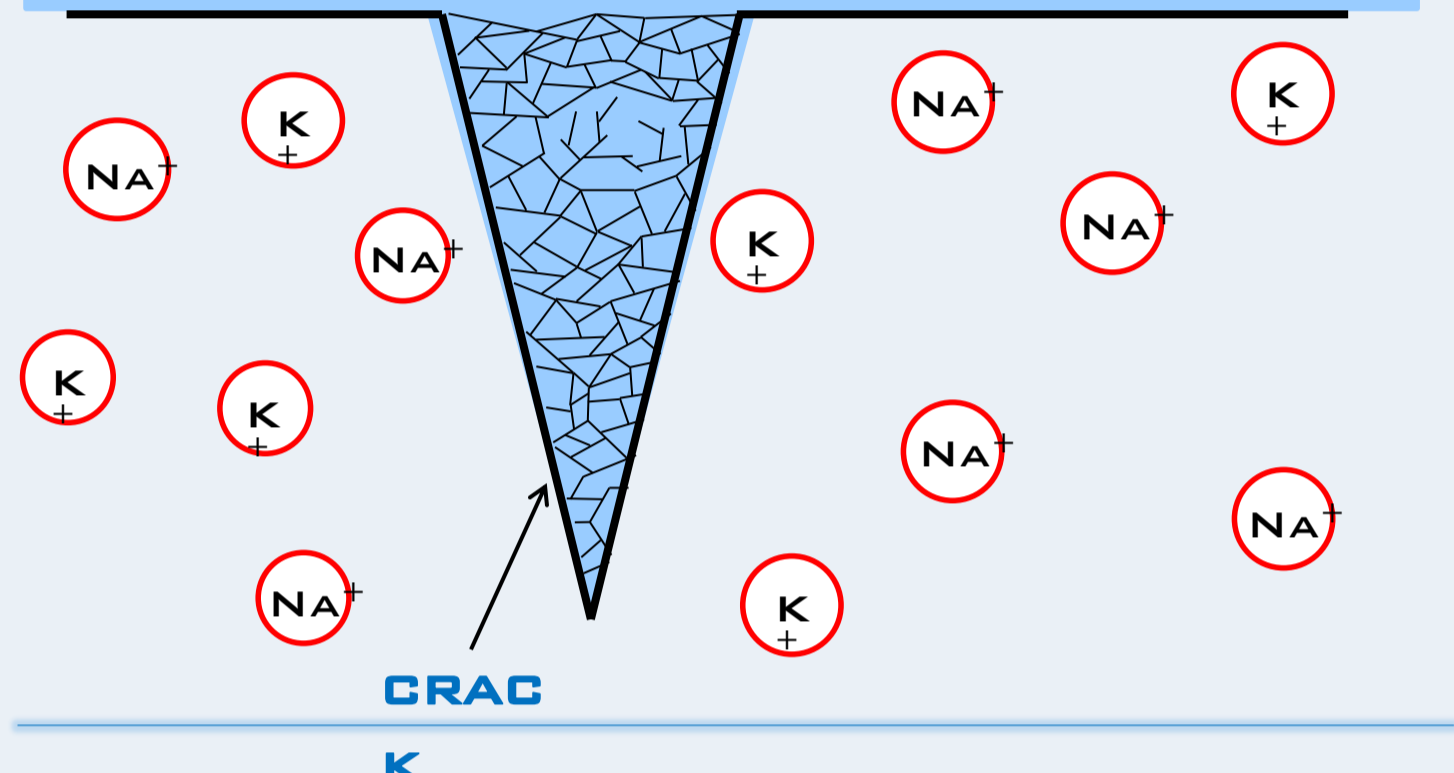
FOR THE CONSERVATION OF STONE AND WOOD:

CALCIUM ALKOXIDE PRECURSORS OF CORRESPONDING **CARBONATE**



FOR THE CONSERVATION OF GLASS:

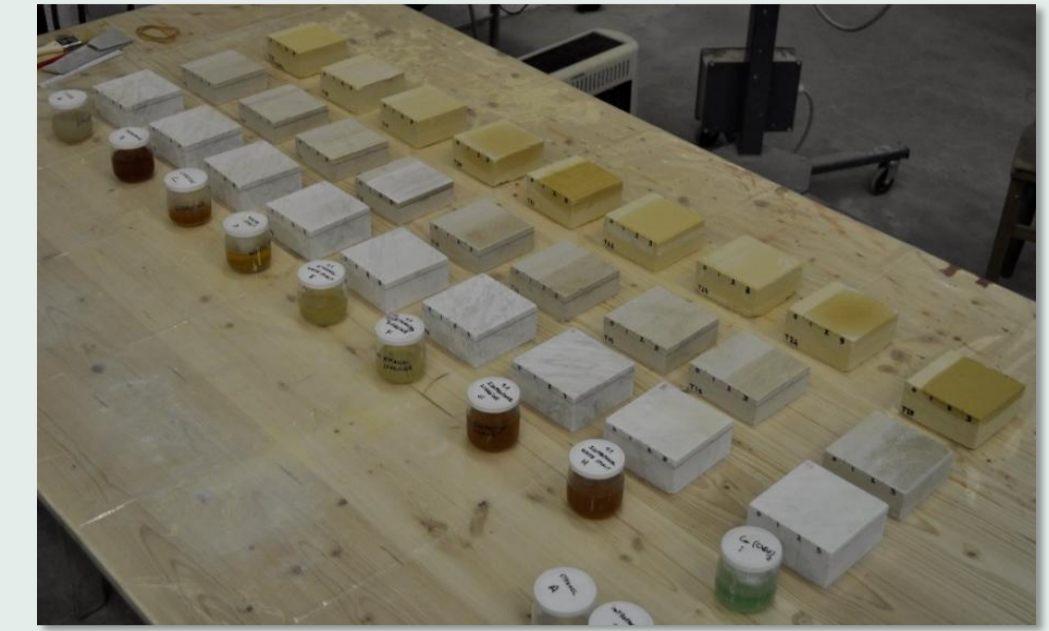
ALUMINIUM ALKOXIDE PRECURSOR OF **AL₂O₃** (DEVELOPED IN EU PROJECT **CONSTGLASS**)



PERFORMANCE ASSESSMENT IN LABORATORY

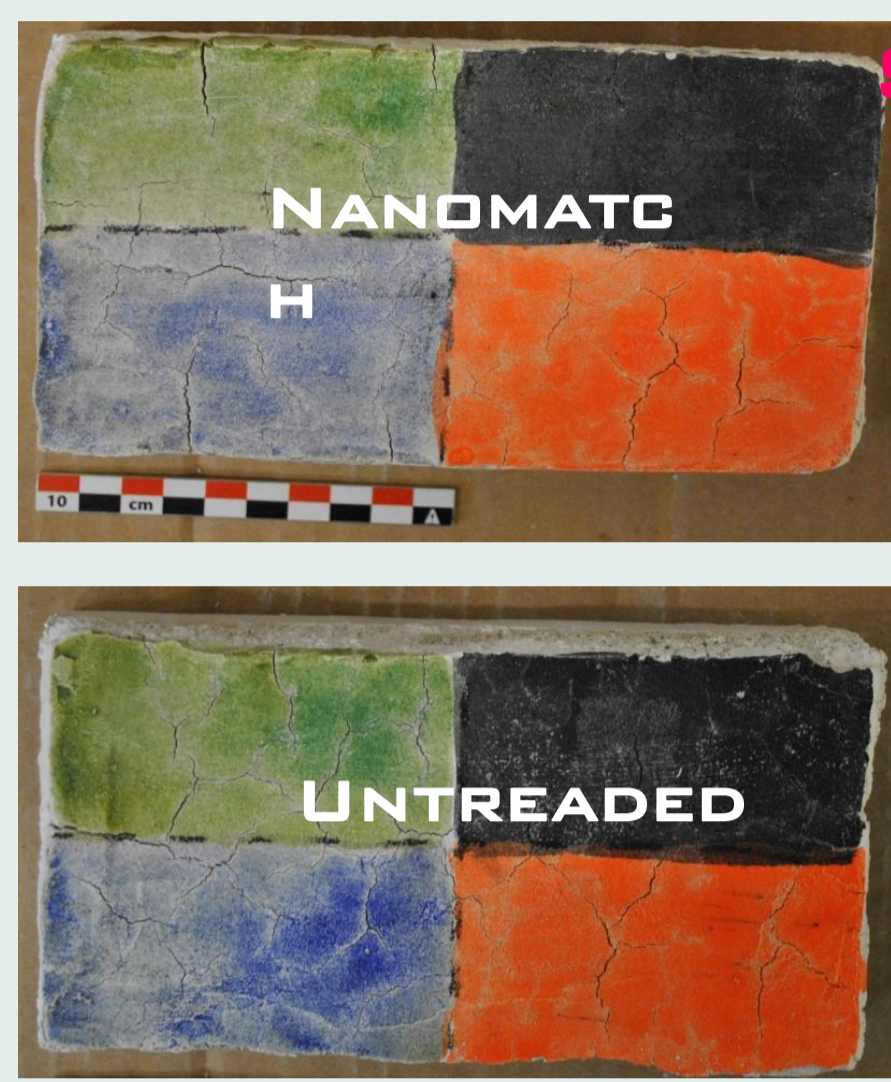
STONE SUBSTRATES:

CARRARA MARBLE, SAVONNIÈRES LIMESTONE, MAASTRICHT LIMESTONE



STONE LIKE SUBSTRATES:

LIME MORTAR WALL PAINTING REPLICA WITH FRESCO / EGG BINDER / OIL BINDER PAINT LAYER AND THREE DIFFERENT SETS OF PIGMENTS



GLASS SUBSTRATES: MODEL GLASSES

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

WOODEN SUBSTRATES:

PINE, POPLAR, LINDEN



PERFORMANCE ASSESSMENT IN FIELD

S. GREGO CATHEDRAL FIRENZE (ITALY)



STAVROPOLEOS MONASTERY BUCHAREST (ROMANIA)

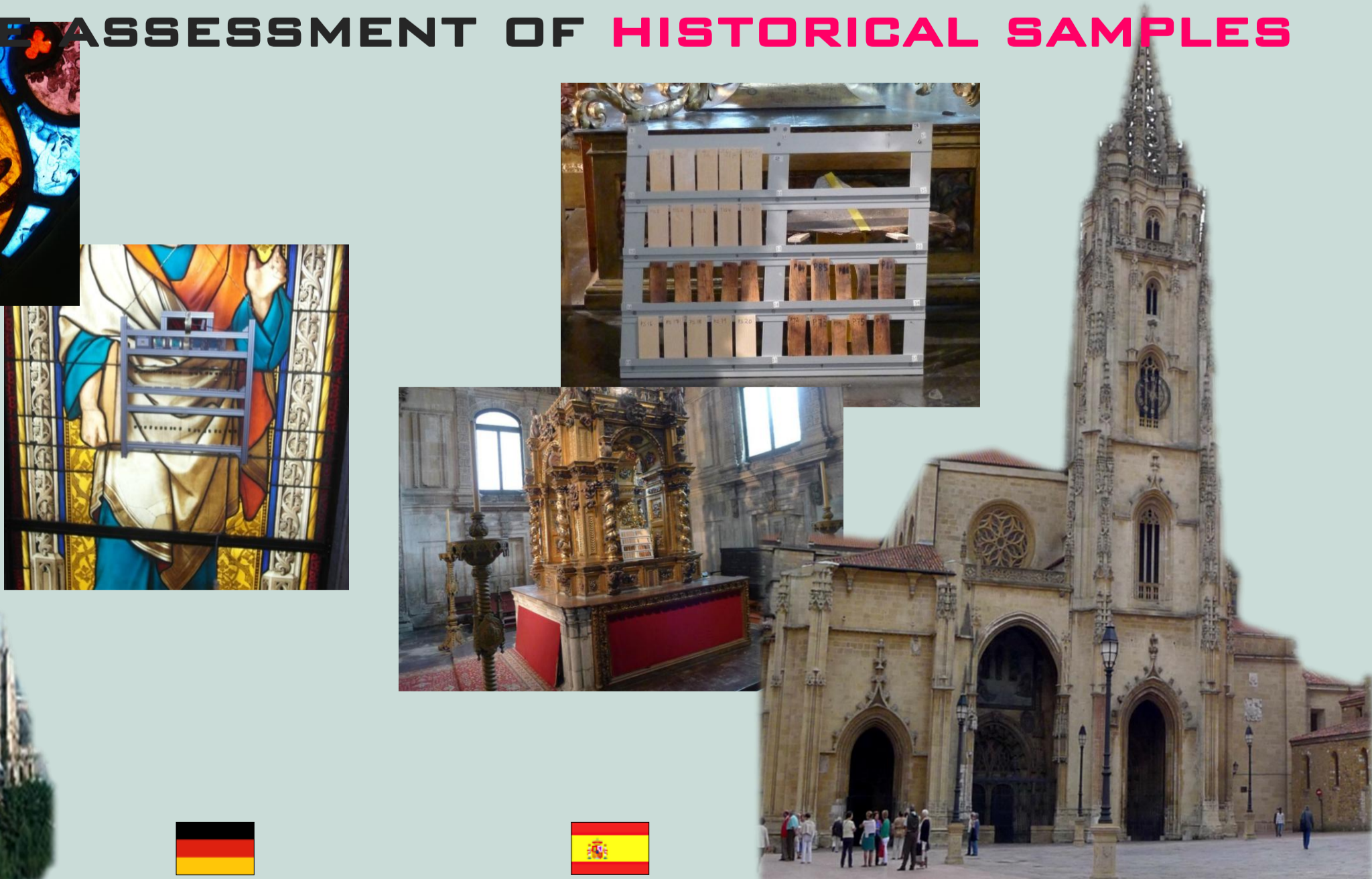


- PERFORMANCE ASSESSMENT OF MODEL SAMPLES IN COMPARISON TO COMMERCIAL PRODUCTS IN TERMS OF **CONSOLIDATION EFFECT**

- PERFORMANCE ASSESSMENT OF **HISTORICAL SAMPLES**



COLOGNE CATHEDRAL (GERMANY)



OVIEDO CATHEDRAL (SPAIN)

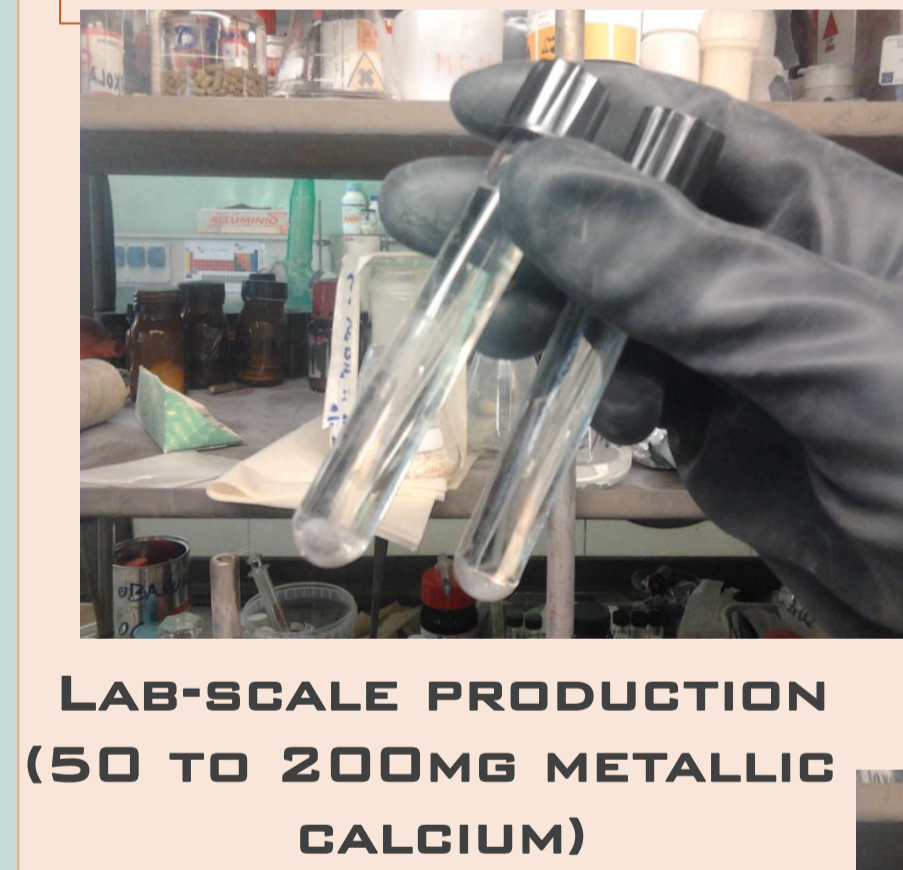
RISK ASSESSMENT & MARKET UP-SCALING

- RISK ASSESSMENT FOR HEALTH & ENVIRONMENT IN RELATION TO:
 - TOXICITY OF METAL ALKOXIDE SOLS AND SOLUTIONS
 - NANO-PARTICLES EXPOSURE

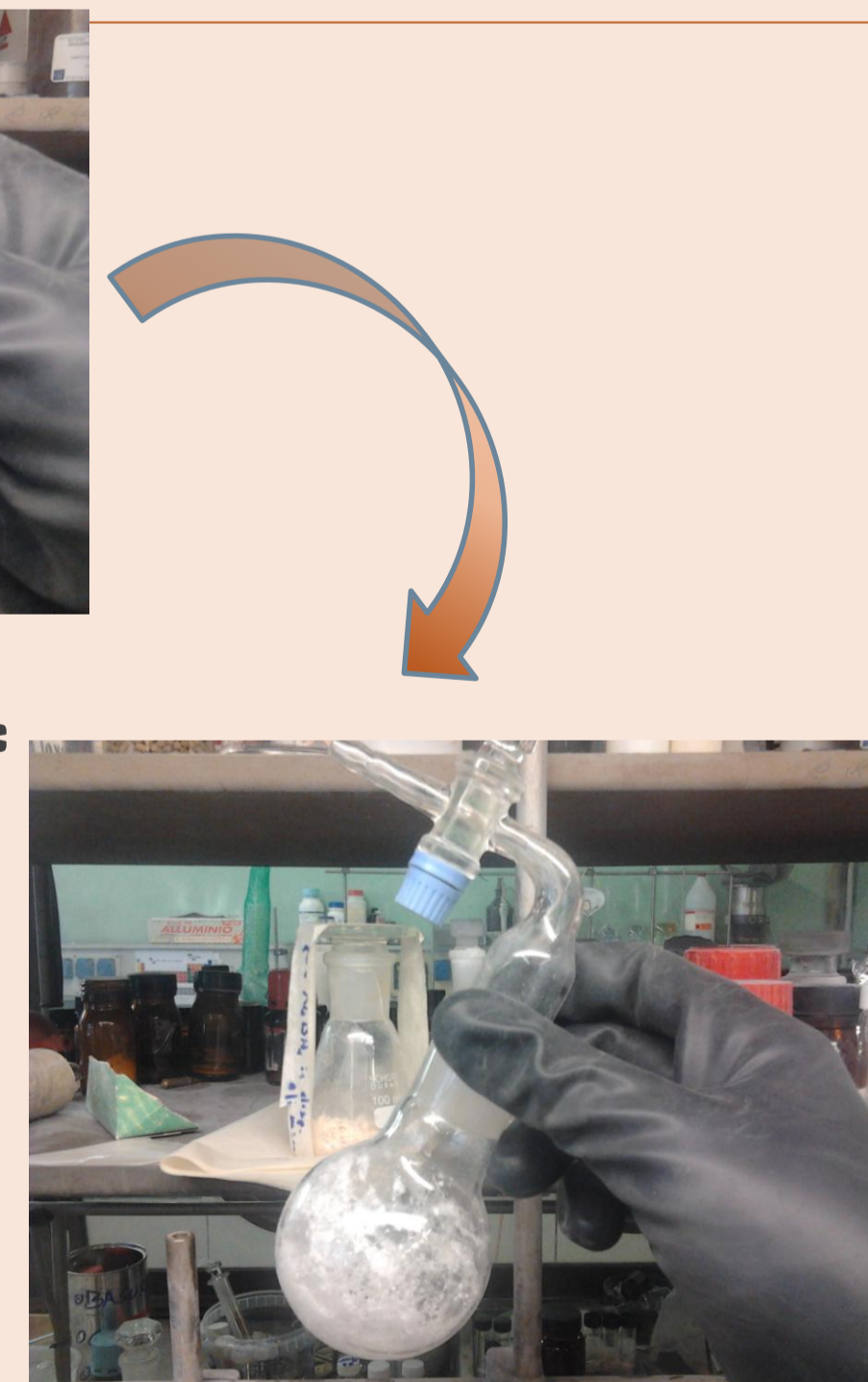
PRODUCTION OF:

- APPLICATION GUIDELINES
- MATERIAL SAFETY DATA SHEET (MSDS)

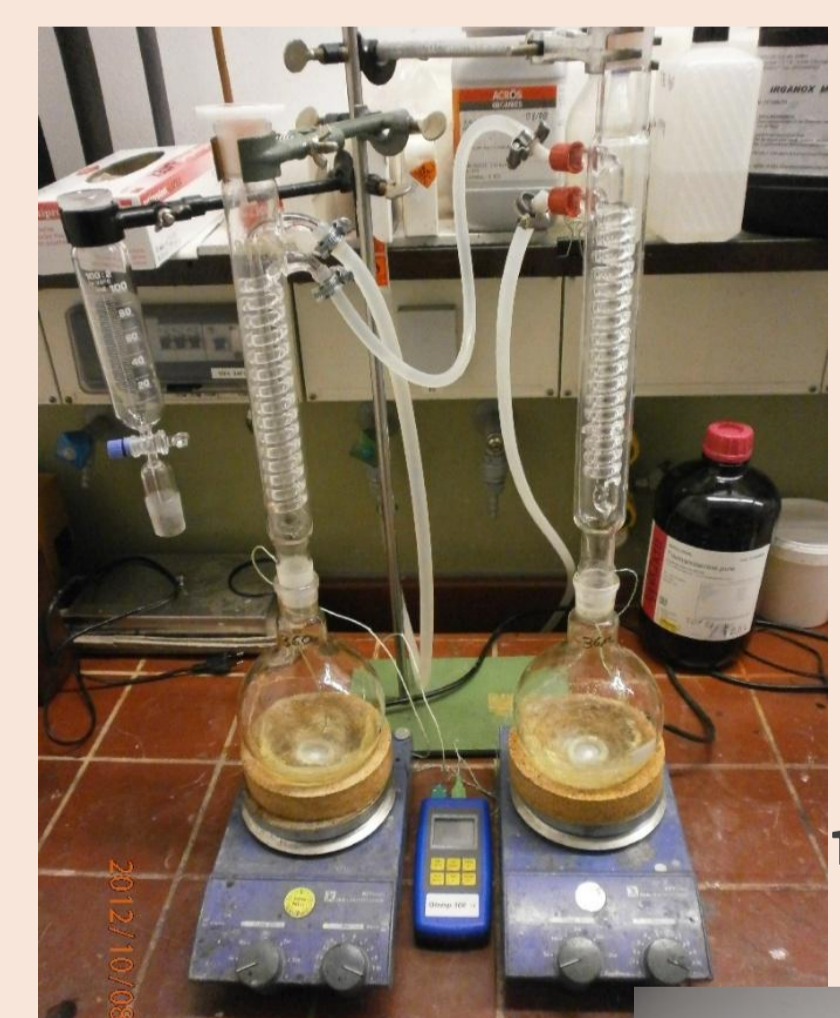
- INDUSTRIAL UP-SCALING: FROM LAB SCALE TO PILOT PLANT



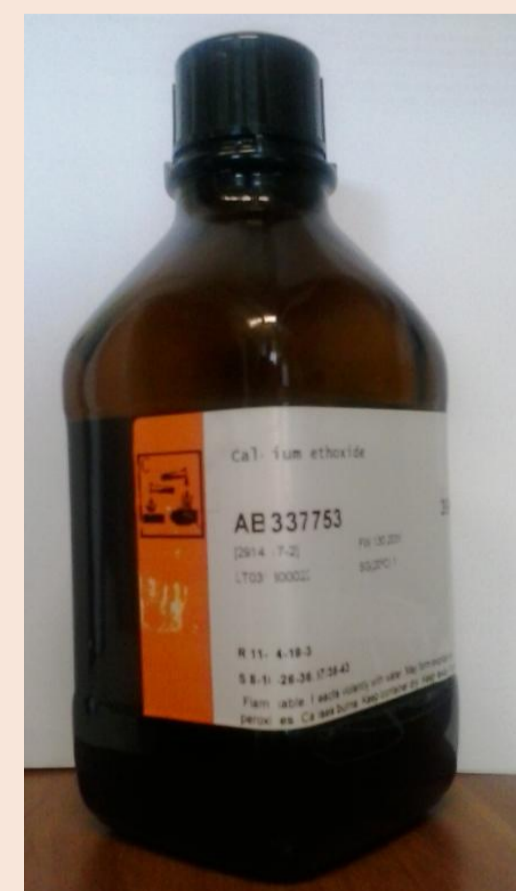
LAB-SCALE PRODUCTION (50 TO 200MG METALLIC CALCIUM)



FIRST UP-SCALE: GR-LAB-SCALE (1 TO 10GR METALLIC CALCIUM)



100 LITRES BATCH SIZES OF A1B



INDUSTRIAL UP-SCALE (UP 300GR METALLIC CALCIUM)

- COSTS/BENEFITS ANALYSIS
- MARKET RISK ASSESSMENT
- BUSINESS PLAN

PARTNERS



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