

Working with archaeologists to reconstitute ancient mortars

Old Dubai plaster case study

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Plâtre.com UAE – Plâtre.com France – Government of Dubai

Outline

Plâtre.com

Gypsum in the middle east – Quick historical survey

Counter-typing of the XVIIth century Jumeirah plaster

Other counter-types

Plâtre.com

Plâtre means **gypsum plaster** in French

We produce custom plasters made out of
gypsum, lime, clay, ...

For **interior** and **exterior** use.

France, UAE, USA.



Stuc Pierre, Av. Bosquet, Paris VII

Custom Plasters since 1880



Gypsum kiln - Vieujot factory
France, 1880



Persian restaurant – Madinat Jumeirah
Dubai, 2007

Our main markets

Decoration



Le Louvre, Mona Lisa room

Restoration



French national stud farm

Gypsum plaster

Oldest constructions of the humanity were made out of gypsum.

Interior plastered wall.

Çatalhöyük – 7000 BC

Anatolia (Turkey)



Gypsum plaster

Gypsum plaster (not lime) was the old egyptian plaster.

Taousert Tomb

Kings Valley – 1195 BC
Egypt



Gypsum plaster in the Middle East

Gypsum plaster is an old tradition in the middle east.

Ornaments

Sana'a – since 14 AD
Yemen



Gypsum plaster in the Middle East

Qal'at al-Bahrain

Manama – 15th c. AD
Bahrain



Gypsum plaster in the Middle East

Al Zubarah Fort

Doha – 17th c. ?
Qatar



Gypsum plaster in the UAE

Painted gypsum
plaster vessel

Dalma Island

Abu Dhabi – 5th mill. BC
UAE



Gypsum plaster in the UAE

Al Hisn Fort

Sharjah – 1822
UAE



Gypsum plaster in the UAE

Umm Al Quwain Fort

Umm Al Quwain – 18th c AD
UAE



Gypsum plaster in the UAE

Al Fahidi Fort
Dubai – 1799
UAE



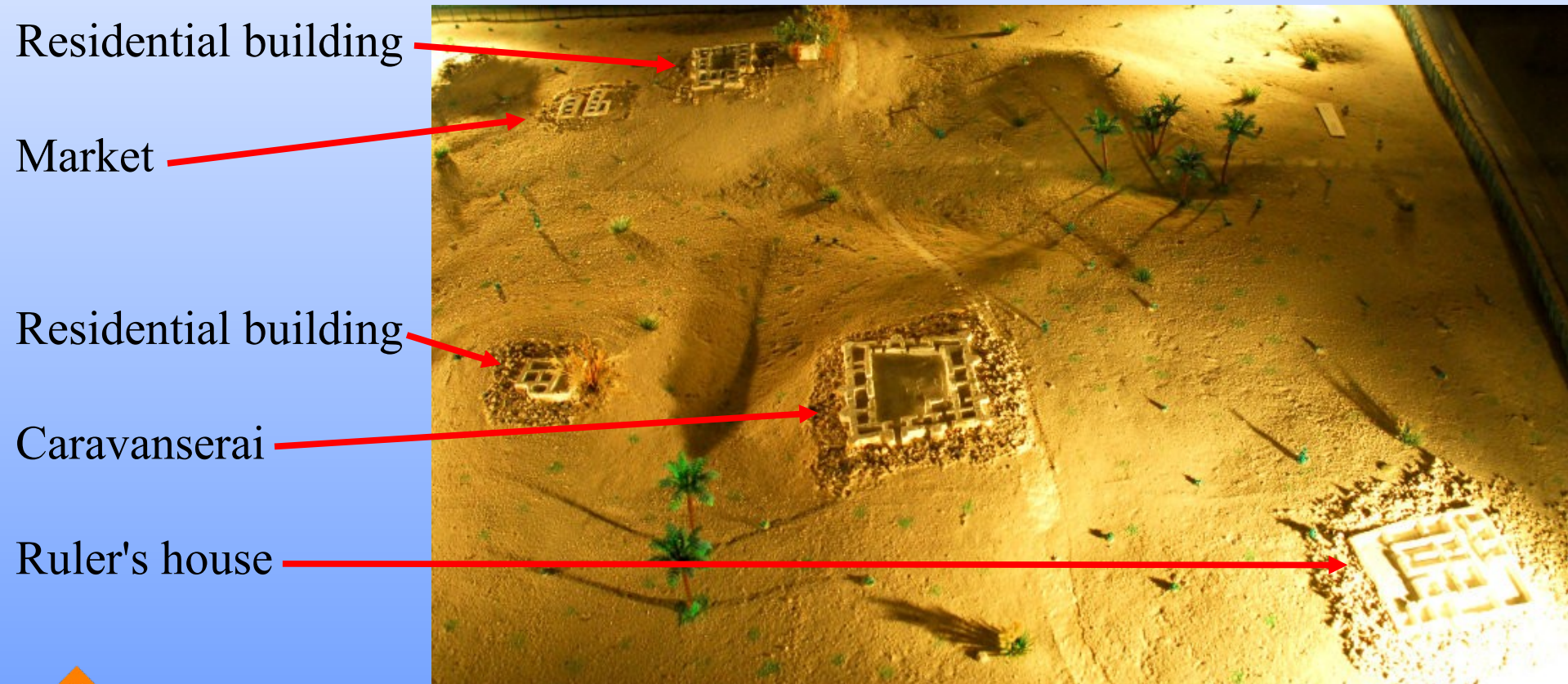
History in the UAE

Jumeirah

Dubai – 10th & 17th c AD
UAE



Jumeirah site



Reproducing the Jumeirah plaster

2 types of plaster :

17th century

10th century



Goals

Identify the techniques used

Find the chemical composition

Find the material(s)

Reproduce the plaster



Techniques - Plastering



Techniques - Carving



General Chemical Analysis

Sulphates (pure Gypsum) : 72%

Calcium carbonates : 18%

Non soluble part : 10%



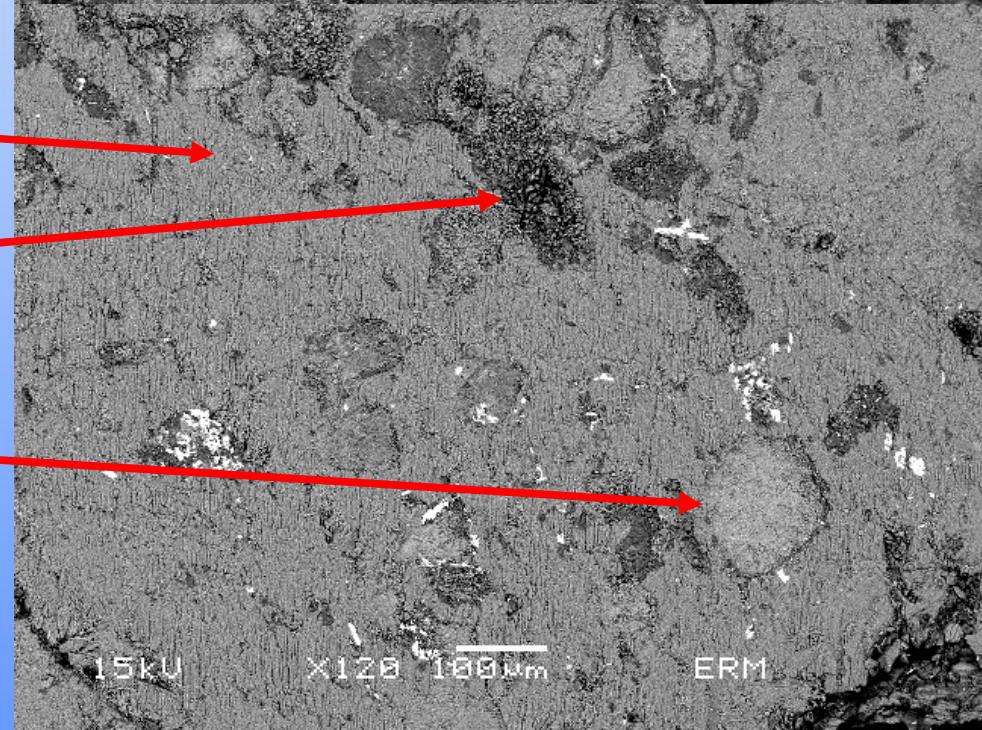
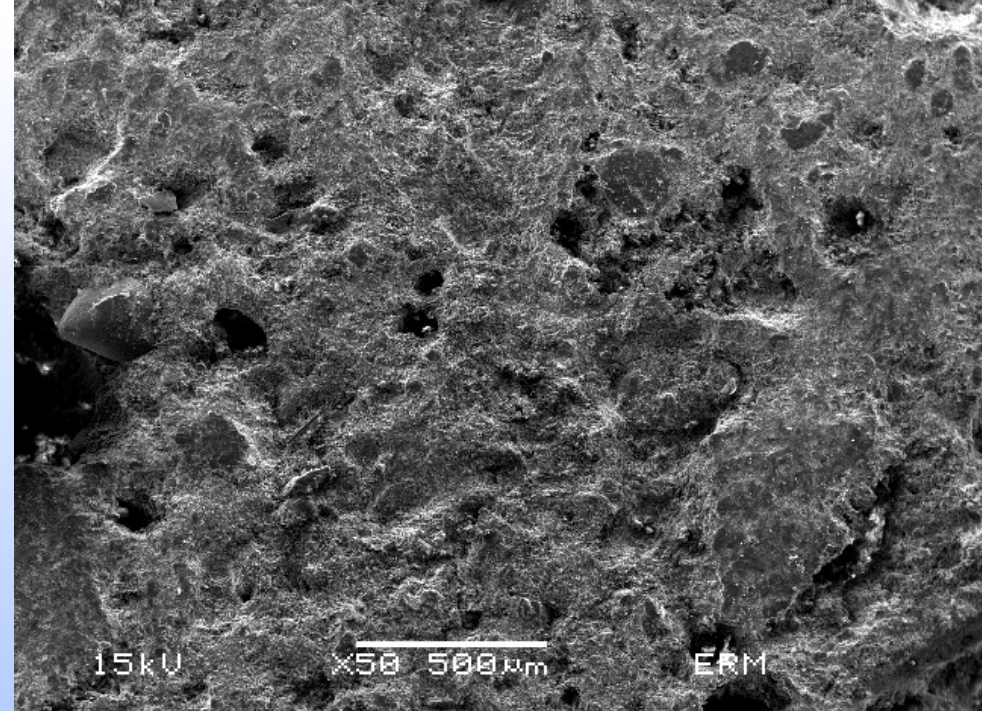
Finer Analysis

SEM - Scanning Electron Microscopy

- Gypsum part

- Carbonate part

- Clay part



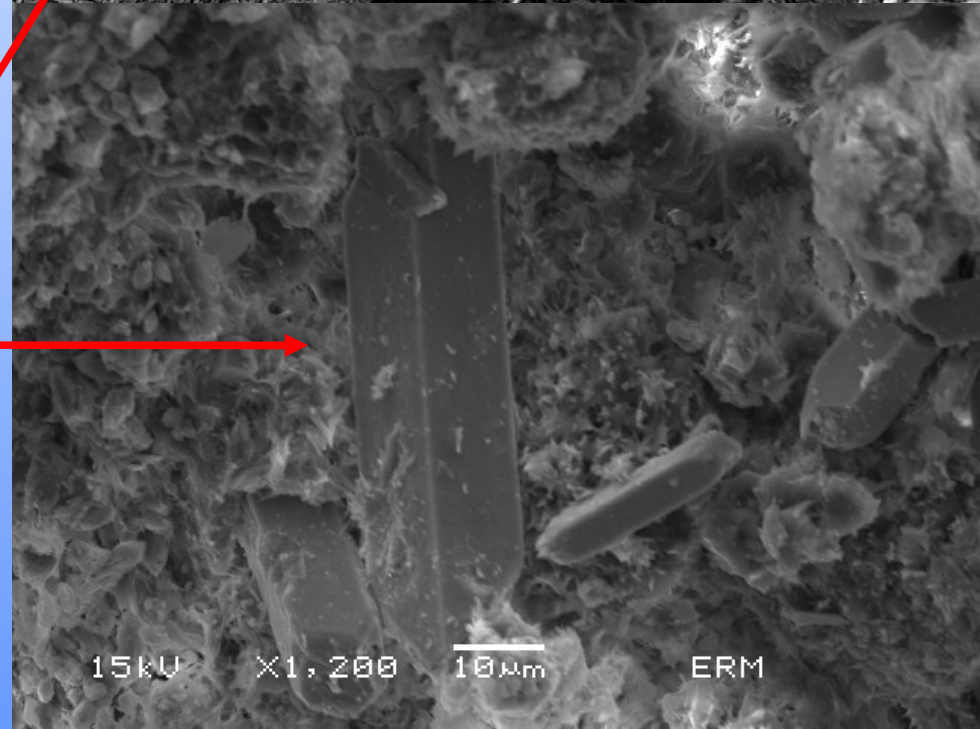
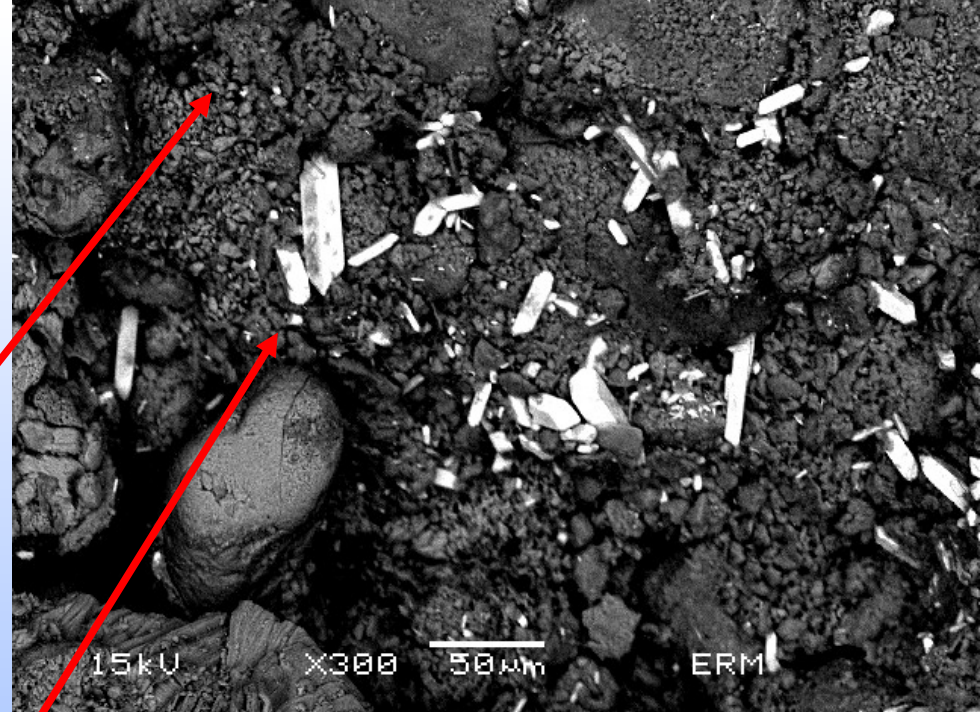
Finer Analysis

Gypsum part

Sulphates contains some
“celestine crystals” (strontium
sulphate)

Gypsum

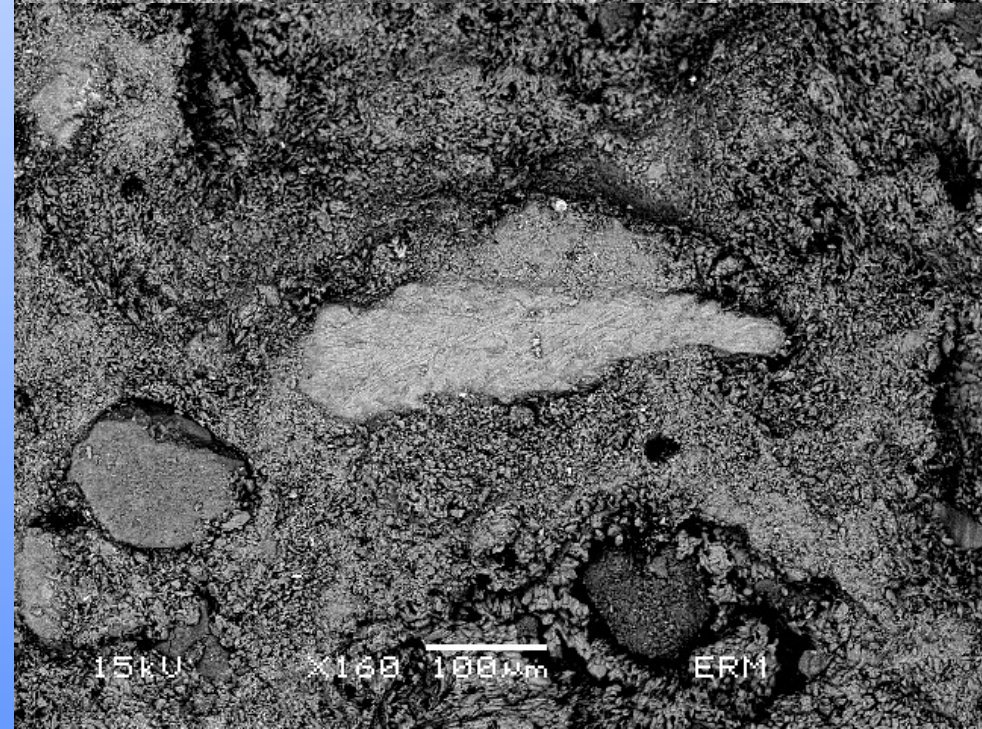
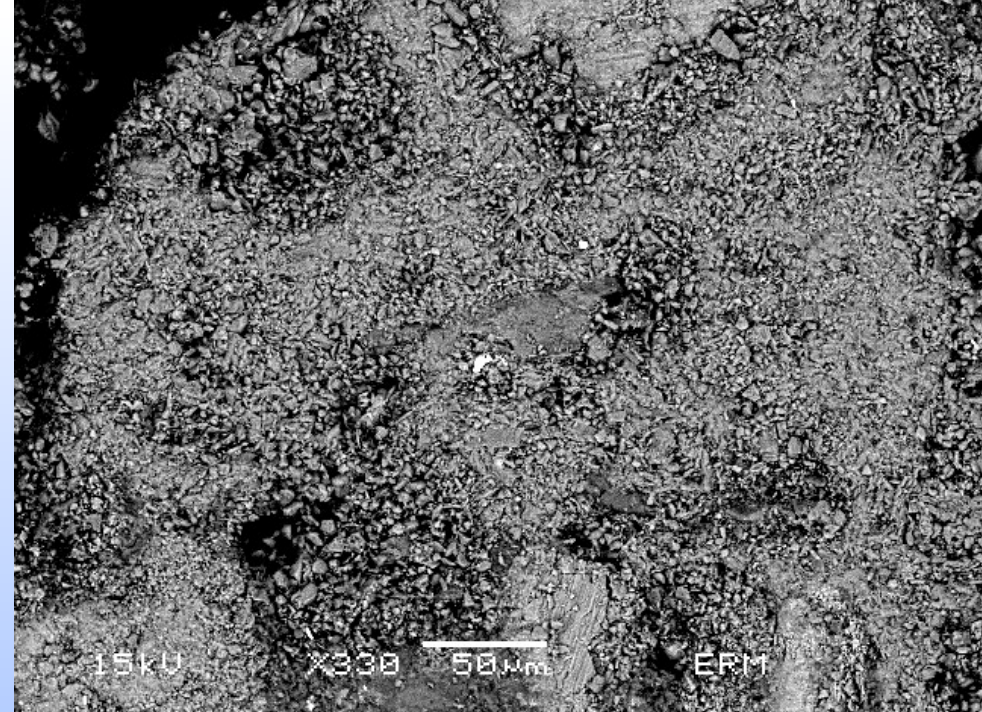
Celestine crystals



Finer Analysis

Carbonate part

Carbonates also have celestine crystals.



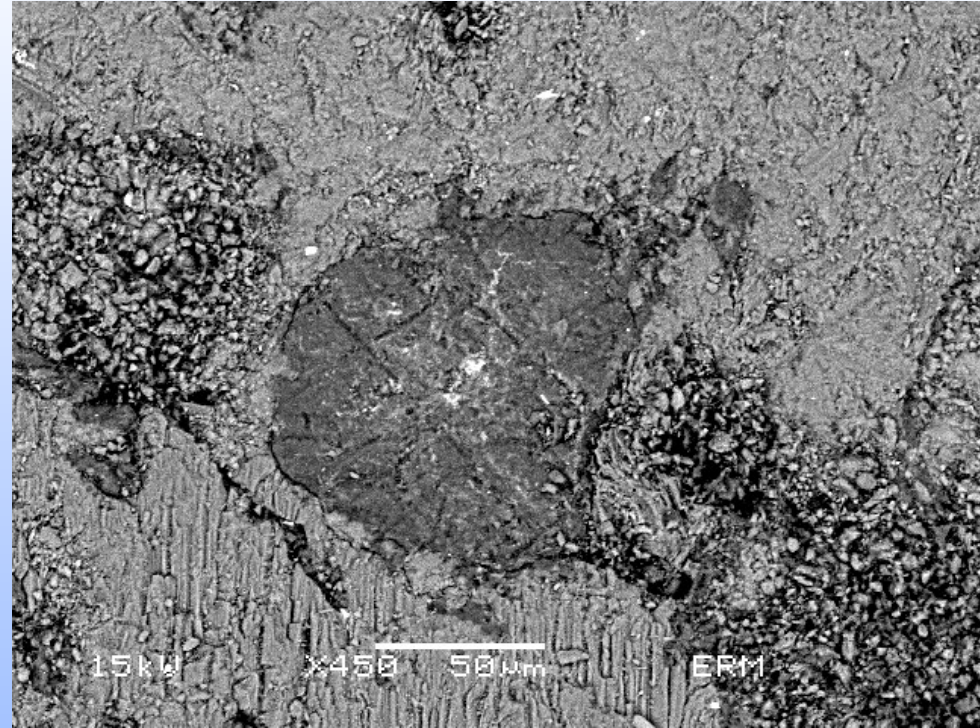
Finer Analysis

Clay part

Carbonates have celestine crystals as well.

This means the Gypsum, Carbonates and Clay are from the same geologic origin and have not been mixed.

They come from the same stone.



Matching composition, colour & texture

Original



D4553



Some other pure gypsum plasters counter-types

Gip – South east of France

Original



Q4384



Some other pure gypsum plasters counter-types

Grillaz, XIXth - Savoie, France

Original



N2705



Some other pure gypsum plasters counter-types

Gria, XIXth – Savoie, France

Original



D4449



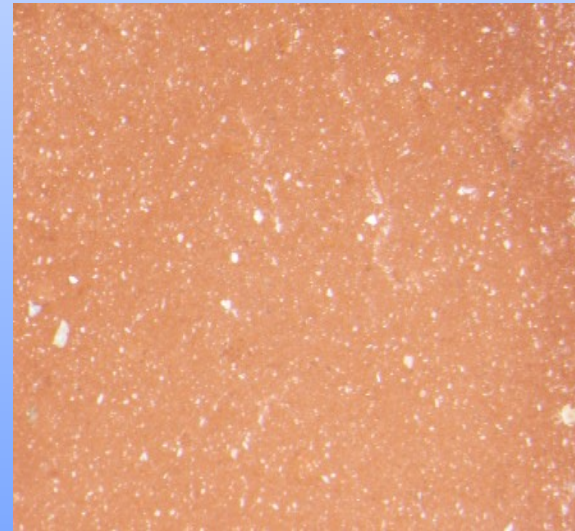
Some other counter-types

Stuc brique, XVIIIth – Versailles, France

Original



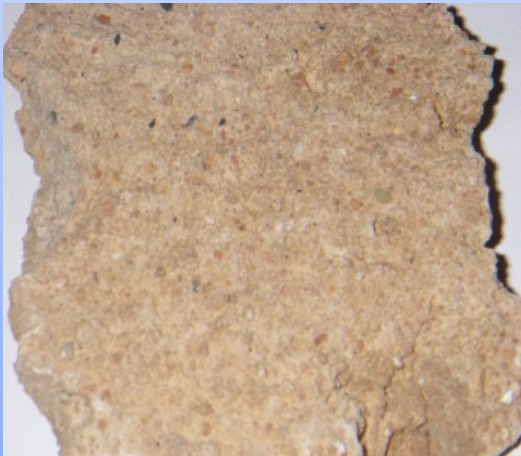
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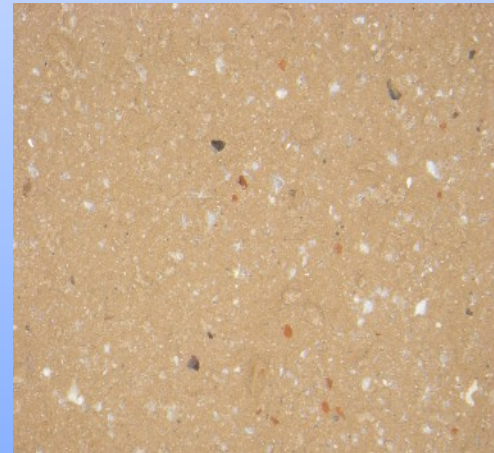
Some other counter-types

Plâtre Briard, XIXth – Brie, France

Original



N2696



Some other counter-types

Bluestone stuc, 1850 – Bruxelles, Belgium

Original



D4527



Jiss or Juss, XIXth – Jumeirah, UAE

Local Jiss is a gypsum plaster used since 10 centuries in the Dubai.

Countertype as made to last 10 centuries ... for the 10,009th Global Gypsum in Dubai.

Let's continue the tradition.

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