

## STONE MATERIALS AND CONSERVATION OF THE BUILT HERITAGE

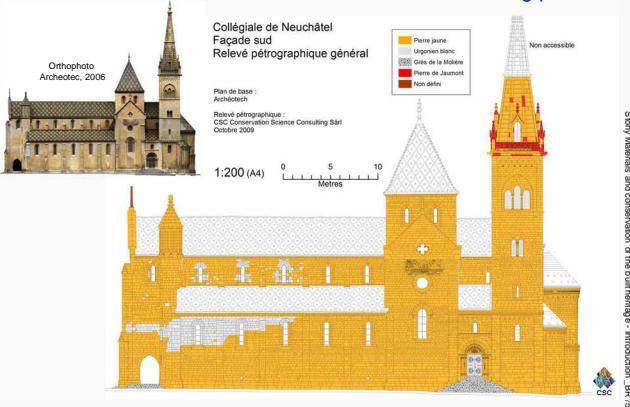
Stone Materials and conservation of the built heritage - Introduction\_BR\_1

Access to the planning, the overheads and the examination questions: <http://www.cscsarl.ch>

Date	Subject	Description	Teacher(s)
19.09.2014	Introduction	Aims of the course – Notion of ethics of conservation Natural Stone (or geomaterials) Minerals, silicates	B. Rousset
<b>26.09.2014</b>	<b>NO LECTURE BUT FIELD AND HOME WORK TO MAKE FOR NEXT FRIDAY</b>		
03.10.2014	Natural stone (or geomaterials)	Rock classification, petrography	B. Rousset
10.10.2014	Natural stone (or geomaterials)	Rock classification, petrography	B. Rousset
<b>17.10.2014</b>	<b>Natural stone in the field</b>	<b>Observation of the three principal families of rocks and some mortars on the buildings in Lausanne</b>	<b>B. Rousset</b>
24.10.2014	Petrophysics	Fluid transfer and mechanical properties of stones	B. Rousset
31.10.2014	<b>Examination subjects</b>	<b>Selected case studies in the region of Lausanne</b> Petrophysics / soluble salts	B. Rousset
07.11.2014	Mortars and a few geopolymers	Historic mortars and restoration mortars / Handling of samples	C. Bläuer
14.11.2014	Stone weathering	Why and how stones are deteriorated	B. Rousset
21.11.2014	Stone weathering	Why and how stones are deteriorated	B. Rousset
<b>28.11.2014</b>	<b>Stone weathering in the field</b>	<b>Identification of the stone deterioration patterns on the buildings in Lausanne</b>	<b>B. Rousset</b>
05.12.2014	Methods and materials of conservation of stone	Methods and products used for consolidation, hydrofiltration and protection of stone materials	B. Rousset
12.12.2014	Methods and materials of conservation of stone	Methods and products used for consolidation, hydrofiltration and protection of stone materials	B. Rousset
<b>19.12.2014</b>	<b>Oral examination</b>	<b>Selected case studies</b>	<b>B. Rousset</b>

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### Which material for which building phase?



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### Who am I ?

**Bénédicte Rousset**, rousset@conservation-science.ch  
CSC Sàrl, Route de Beaumont 13, 1700 Fribourg – Tél. : 026 422 12 44

#### Education

2001 PhD in Geology-petrophysics (University Louis Pasteur in Strasbourg, France)

#### Professional experience

2001-2006 Conservation scientist, Expert-Center on the EPFL site (Materials depart.) (the "ancestor" was the Lab. de Conservation de la Pierre, EPFL),  
2007-... Conservation scientist, Conservation Science Consulting Sàrl, Fribourg (private laboratory)

#### Teaching experience

2000-2001 Teaching assistant (T.A) in geology (Strasbourg University)  
2001-2004 T.A. in "Materials and conservation of the cultural heritage" (EPFL)  
2005-... Lecturer in "Stony materials and conservation of the built heritage" (EPFL)  
2011-... Lecturer in "façades en pierre naturelle" (Certificate of Advanced Studies "expertise technique dans l'immobilier" EPFL, EIA FR)

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## INTRODUCTION What are the aims this course?

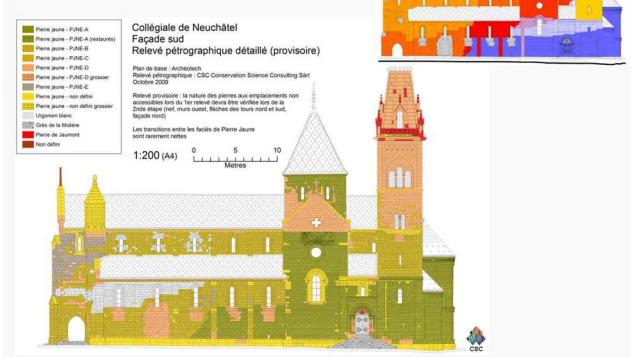
### Objectives:

An approach to the sustainable development of the stone materials of the built heritage

- to identify the stony materials
- to identify the weathered state of these materials
- to identify the reasons of the weathering
- to have a notion of building and conservation materials compatibility

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### Which material for which building phase?



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### Normal or abnormal weathering pattern?



FR, Estavayer-le-Lac, "sentier des dominicaines", 18.09.2008

3e - Introduction\_BR/7



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### Normal or abnormal weathering pattern?



FR, Fribourg, cathedral, 31.07.2010



FR, Fribourg, rampart, 28.03.2007

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### Normal or abnormal weathering pattern?



FR, Fribourg, Rue du Tilleul, 29.05.2008

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### Normal or abnormal weathering pattern?



FR, Wünnewil, church, 04.09.2011

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### Normal or abnormal weathering pattern?



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### Normal or abnormal weathering pattern?



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BE, Thun, Schadau castel, 18.09.2008

BE, La Neuveville, 22.05.2009



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## Material compatibility?



FR, Fribourg, St Maurice church, 23.05.2008

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## Material compatibility?



FR,  
Mézières castel,  
01.07.2009

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## Which material and deteriorations? What can be done?



BS, Basel, Gate of Spalen (Spalentor)  
2010, Erick Schmid



Material and deterioration patterns  
cartography, CSC juli 2011

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## NOTION OF ETHICS International charters and conventions

- **1931 The Athens Charter / Restoration of Historic Buildings**
- **1954 Hague Convention / Protection of Cultural Property in the Event of Armed Conflict**
- **1964 The Venice Charter / Conservation and Restoration of Monuments and Sites**

**ICOMOS**  
international council on monuments and sites

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[www.icomos.org/en/charters-and-texts](http://www.icomos.org/en/charters-and-texts)

15.09.2014

**ICOMOS**  
international council on monuments and sites



Charters and other doctrinal texts

CHARTERS ADOPTED BY THE GENERAL ASSEMBLY OF ICOMOS

(see also "Monuments and Sites" - vol. 2 2004)

- Monumental Charter for the Conservation and Restoration of Monuments and Sites (*The Venice Charter*) - 1964 [French] [Spanish]
- Historic Gardens (*The Florence Charter*) - 1981 [French] [Spanish]
- Charter for the Conservation of Historic Towns and Urban Areas (*The Washington Charter*) - 1987 [French] [Spanish]
- Charter for the Protection and Management of the Archaeological Heritage - 1990 [French] [Spanish]
- Charter for the Protection and Management of the Natural Environment - 1995 [French] [Spanish]
- International Cultural Tourism Charter - Managing Tourism at Places of Heritage Significance - 1999 [French] [Spanish] [Greek] [Mandarin] [Dutch]
- Principles for the Preservation of Historic Timber Structures - 1999 [French] [Spanish]
- ICOMOS Charter - Principles for the Conservation and Management of Industrial Heritage - 2000 [French] [Spanish]
- ICOMOS Charter - Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage - 2003 [French] [Spanish]
- ICOMOS Principles for the Preparation and Conservation-Restoration of Wall Paintings - 2003 [French] [Spanish]
- ICOMOS Charter on Cultural Routes - 2008 [French] [Spanish]
- ICOMOS Charter on the Interpretation and Presentation of Cultural Heritage Sites - 2008 [French] [Spanish] [Chinese]
- Joint ICOMOS - TICCIH Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes - 2011 [French]
- The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas - 2011 [French] [Spanish] [Croatian] [Serbian] [Bosnian]

2014  
Italy-Florence  
18<sup>th</sup> General Assembly

ICOMOS

2014

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<http://www.bak.admin.ch/kulturerbe/04273/04293/index.html?lang=fr>

15.09.2014

Archives finançantes  
Login aux archives et experts fédéraux  
Commission fédérale des monuments historiques  
Patrimoine mondial de l'UNESCO  
Patrimoine européen  
Musées, institutions culturelles, collections  
Protection des biens culturels  
Patrimoine culturel immatériel  
Transfert des biens culturels  
L'art spolié  
Traditions vivantes  
Métropolitaine

La Commission fédérale des monuments historiques  
• conseille les départements sur toutes les questions fondamentales relatives à la protection du patrimoine culturel et à l'archéologie  
• élabore et publie des documents de la Commission fédérale sur la protection de la nature et du paysage (PNP) ainsi que sur l'élaboration et à la mise à jour des inventaires des objets d'importance nationale  
• à la demande de l'ICFC, donne son avis sur des requêtes d'aides financières dans le domaine de la protection du patrimoine et de l'archéologie  
• encourage les travaux de base et sur les nouveaux développements en matière de protection du patrimoine et de l'archéologie  
• collabore et entretient des échanges scientifiques avec tous les milieux intéressés.

Principes pour la conservation du patrimoine culturel bâti en Suisse  
La publication « Principes pour la conservation du patrimoine culturel bâti en Suisse » contient les principes qui guident le travail de la Commission et a été développée pour devenir une référence au plan national. L'ouvrage peut être commandé à l'adresse suivante

Sécurité surveillée des monuments historiques  
Dernière modification: 17.03.2009 | Dimension: 57 kb | Typ: PDF

Ouvrages souterrains en milieu historique  
Dernière modification: 23.03.2011 | Dimension: 4 kb | Typ: PDF

Antennes pour la téléphonie mobile  
Dernière modification: 17.03.2009 | Dimension: 59 kb | Typ: PDF

Les fenêtres dans les bâtiments historiques - document de base de la Commission fédérale des monuments historiques  
Dernière modification: 17.03.2009 | Dimension: 60 kb | Typ: PDF

Les salles historiques des musées  
Dernière modification: 27.03.2011 | Dimension: 71 kb | Typ: PDF

L'art dans les bâtiments historiques  
Dernière modification: 17.03.2009 | Dimension: 34 kb | Typ: PDF

Protection des abords des monuments  
«protection des abords des monuments», principes édictés par la Commission fédérale des monuments historiques (CFMH)  
Dernière modification: 17.03.2009 | Dimension: 46 kb | Typ: PDF

Story Materials and conservation of the built heritage - Introduction\_BR\_18