

## CONFERENCE PROGRAMME

### SUNDAY, 10<sup>TH</sup> OF JUNE

17:00 - 21:00	Registration – Ice breaker Faculté des Sciences et Techniques
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### MONDAY, 11<sup>TH</sup> OF JUNE

8:00 - 8:30	Registration
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#### **Biominerals, astrobiology, planetology, carbon compounds**

**Chairpersons:** H.G. Edwards, J. Jehlicka

8:30 - 8:50	Welcoming - introduction
8:50 - 9:05	Practical information
9:10 - 9:40	INVITED CONFERENCE – SHIV SHARMA Scanning time-resolved stand-off Raman instrument for large area mineral detection on planetary surfaces.
9:40 - 10:10	INVITED CONFERENCE – FERNANDO RULL-PEREZ Raman spectroscopy for planetary applications.
10:10 - 10:30	PETR VÍTEK Evaluation of portable Raman instrumentation for detection of traces of life in rocks – implication for the astrobiological prospecting of Mars.

10:30-10:50 Coffee break

#### **Biominerals, astrobiology, planetology, carbon compounds**

**Chairpersons:** O. Beyssac, C.P. Marshall

10:50 - 11:20	INVITED CONFERENCE – JAN JEHLICKA Use of Raman Spectroscopy for geobiology applications in saline environments.
11:20 - 11:40	CÉCILE FEUILLIE Enzyme-free specific detection of nucleic acids by SERRS.
11:40 - 12:10	INVITED CONFERENCE – HOWELL G.M. EDWARDS Raman Spectroscopy of Extremophiles in Cultural Heritage and in Extreme Environments : an Interface Between Archaeological Cultural Heritage and Terrestrial Mars Analogue Sites.
12:10 - 12:30	SUSANA E. JORGE-VILLAR Raman spectroscopy study of three extremophile lichens from the Tabernas Desert (Spain) in relation to the search of bio-markers in extraplanetary exploration missions.

12:30-14:00 Lunch

14:00-15:10 Exhibitors and sponsors conferences.

**Biominerals, astrobiology, planetology, carbon compounds**

**Chairpersons:** F. Rull-Perez, S. Sharma

15:15-15:45	INVITED CONFERENCE – OLIVIER BEYSSAC Raman spectroscopy of graphitic carbons in the Earth Sciences: review and novel applications.
15:45-16:05	ANTONIO TARRIÑO Organic matter characterization by Raman spectroscopy in chert of archaeological interest from the Cantabrian area and Western Pyrenees.
16:05-16:25	S.Y. CHAZHENGINA Shungite carbon as an indicator of metamorphic transformations.

16:25-16:45 Coffee break

16:45-17:05	CRAIG P. MARSHALL Multiple generations of carbonaceous material in the ~3.5 Ga Apex chert: A cautionary tale for the preservation of ancient microfossils.
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**Biominerals, astrobiology, planetology, carbon compounds**

**Chairpersons:** F. Rull-Perez, S. Sharma

17:05 - 17:25	XAVIER BOURRAT AFM-Raman coupling to study mesocrystal polymorphism in nacre.
17:25 - 17:45	E. LALLA Mineral characterization of selected samples from “Las Cañadas” edifice, Tenerife – (Islas Canarias) by Raman and infrared spectroscopy and X-ray diffraction.

17:45-18:45 Poster session I

**TUESDAY, 12<sup>TH</sup> OF JUNE**

**Methodology and instrumentation**

**Chairpersons:** J. Popp, I-M. Chou

8:40 - 9:10	INVITED CONFERENCE – ALIAN WANG Raman imaging of extraterrestrial materials.
9:10 - 9:30	ROBERT C. BURRUSS Multimodal 3D coherent anti-Stokes Raman scattering (CARS) microscopy and spectroscopy of hydrocarbon fluid inclusions.
9:30 - 9:50	FRÉDÉRIC FOUCHER Raman mapping of silicified biological remains.
9:50 - 10:20	INVITED CONFERENCE – MICHAEL GAFT UV gated Raman of minerals.

10:20-10:40 Coffee break

**Methodology and instrumentation**

**Chairpersons:** A. Wang, M. Gaft

10:40 -11:00	JUERGEN POPP Deep UV-Raman instrumentation for quick mineral sample investigations.
11:00 - 11:20	THOMAS BOCKLITZ Investigation on calibration procedures of Raman devices.
11:20 - 11:40	GEORG SPIEKERMANN Vibrational properties of silica species in the system SiO <sub>2</sub> -H <sub>2</sub> O from ab initio molecular dynamics.
11:40 - 12:00	TAMÁS VÁCZI Semiquantitative evaluation of damage annealing caused by the electron beam irradiation of zircon.
12:00 - 12:20	ALESSIA COCCATO Micro-Raman spectroscopy for quantitative analysis of garnets: application to the provenance study of artifacts in “pietra ollare”.

12:20 - 13:50 Lunch

13:50 - 14:50 Poster session II

### Cultural heritage

**Chairpersons:** A.C. Prieto, M. Ostrooumov

14:50 - 15:20	INVITED CONFERENCE – PHILIPPE COLOMBAN Rocks as blue, green and black pigments/dyes of glazed pottery and enamelled glass.
15:20 - 15:50	INVITED CONFERENCE – PETER VANDENABEELE Recent work in analytical archaeometry: the use of combined method approaches.
15:50 - 16:10	SUSANA E. JORGE-VILLAR Raman spectroscopy study of Paleolithic stone lamps found in the Ardales Cave (Guadalteba county, Málaga, Spain).
16:10 - 16:30	DELPHINE NEFF Study of archaeological slags by Raman spectroscopy.

16:30 - 16:50 Coffe break

### Experimentation

**Chairpersons:** R.C. Burruss, J. Pironon

16:50 - 17:10	CÉCILE DA SILVA-CADOUX Study of water / heavy water mixtures by Raman spectroscopy in the supercritical domain.
17:10 - 17:30	I-MING CHOU CO <sub>2</sub> standards in a fused silica capillary capsule for Raman spectroscopic measurements of CO <sub>2</sub> density.
17:30 - 17:50	WANJUN LU Determination of diffusion coefficients of carbon dioxide in water between 298 and 473 K in a high-pressure capillary optical cell with in-situ Raman spectroscopic measurements.
17:50 - 18:10	SÉBASTIEN FACQ <i>In situ</i> Raman study of dissolved calcite at high pressure and high temperature.
18:10 - 18:30	NAËMI WAESELMANN In-situ high-pressure and high-temperature Raman spectroscopy on advanced perovskite-type relaxor ferroelectrics.

20:00 Social dinner – Town Hall, Stanislas square

**WEDNESDAY, 13<sup>TH</sup> OF JUNE**

**Experimentation**

**Chairpersons:** I-M. Chou and V.G. Baonza

8:30 - 9:00	<b>INVITED CONFERENCE – VALENTIN GARCIA-BAONZA</b> Water and aqueous solutions under high pressure/high temperature conditions: correlations from Raman spectroscopy experiments.
9:00 - 9:20	<b>CHRISTIAN SCHMIDT</b> In situ study of the pseudobinary system H <sub>2</sub> O + NaAlSi <sub>3</sub> O <sub>8</sub> to 800 °C and 2.4 GPa using Raman spectroscopy and a diamond anvil cell.
9:20 - 9:40	<b>GLEB POKROVSKI</b> In situ Raman spectroscopy reveals new sulfur forms in high-temperature geological fluids.
9:40 - 10:00	<b>MAXIME DARGENT</b> Speciation of uranyl in chloride solution (LiCl = 0.5 -12 M) and reactivity with carbon - in situ Raman characterization in silica glass capillary up to 350°C. Metallogenic implications and perspectives.

10:00-10:20 Coffee break

**Experimentation**

**Chairpersons:** C. Schmidt and G. Pokrovski

10:20 - 10:40	<b>ELENA BAZARKINA</b> Raman spectroscopy study of vapor-liquid equilibria in H <sub>2</sub> -H <sub>2</sub> O-NaCl system.
10:40- 11:00	<b>MICHEL DUBOIS</b> Metastability and phase relationships at low to very low temperature (down to -180°C) in the H <sub>2</sub> O-NaCl-LiCl system using Raman microspectrometry applied on fluid inclusions.
11:00 - 11:20	<b>VICTORIA MUNOZ IGLESIAS</b> Raman study of the fractional precipitation of different brines at several pressures, and its implications to the habitability of Europa satellite.

### Mineralogy and Gemmology

**Chairpersons:** R.L. Frost and M. Perraki

11:20 - 11:40	EMMANUEL FRITSCH The Raman spectra of natural and synthetic spinels: from crystalline to amorphous.
11:40- 12:00	STEFANOS KARAMPELAS Raman spectra on natural pearls and shells of pearl producing mollusks.
12:00 - 12:20	GASTON GIULIANI Raman microspectrometry applied to the identification of inclusions in ruby from marble deposits in central and South-East Asia.
12:20 - 12:40	MARTA BERKESI The significance of the use of Raman microspectroscopy on understanding CO <sub>2</sub> -rich fluids in the mantle: a comparative fluid inclusion study.

12:40-14:10 Lunch

### Mineralogy and Gemmology

**Chairpersons:** Ludovic Bellot-Gurlet and Suzana Jorge Villar

14:10 - 14:30	SERGIO ANDO Raman spectroscopy in heavy-mineral studies.
14:30 - 14:50	GÉRARD PANCZER Self irradiation of natural powellite CaMoO <sub>4</sub> from U-Mo Bota-Burum deposit (Kazakhstan).
14:50 - 15:10	XIAOCHUN WANG Optical properties of powellite CaMoO <sub>4</sub> crystal under irradiations by Raman and luminescent spectroscopies.
15:10 - 15:30	CHRISTIAN BURLET Raman micro-spectroscopic study of Heterogenite (HCoO <sub>2</sub> ) : structure, vibrational modes and polytypic differentiation.
15:30 - 15:50	ELENA POPOVA Relaxation Dynamics in Raman Spectra of Loparite.
15:50 - 16:10	PATRICK SCHMIDT New data about the Raman signature of moganite: A hitherto unrecognised band in the Raman spectra of chalcedony and other silica rocks.

16:10-16:30 Coffee break

## Mineralogy and Gemmology

**Chairpersons:** G. Panczer and Peter Vandenabeele

16:30 - 16:50	<b>PETROS KOUTSOVITIS</b> Raman Spectroscopic Study of Vesuvianites from a Rodingite of Aerino Ophiolitic Unit, Central Greece.
16:50 - 17:10	<b>MICHEL CATHELIN</b> Serpentines and their alteration products associated with the exhumation and supergene alteration of the New Caledonia ophiolite : a Raman, XRD, SEM and TEM study.
17:10 - 17:30	<b>ARRIETA NIKOLE</b> Raman spectroscopy and SEM-EDX application on the geochemical characterization of the cemented materials obtained in beachrock test drillings (Azkorri beach, Basque Country).
17:30 - 17:50	<b>NICOLAS MAUBEC</b> Use of Raman spectroscopy to characterize and distinguish minerals of the alunite supergroup.
17:50 - 18:10	<b>RAY FROST</b> The application of Raman spectroscopy to the study of Cave mineral phosphates.

**18:10 - 18:30 Meeting closure and announcement of GeoRaman XI<sup>th</sup>**

## POSTERS

Posters are organized by sessions and in alphabetical order of the name of the first author.

<b>Biominerals, astrobiology, planetology, carbon compounds</b>		
p1 B	Resonance micro-Raman mapping of pigments and mineral phases in marine biogenic carbonates.	Bergamonti L.
p2 B	Raman microspectroscopy of carbonaceous materials in marbles from Alentejo, Portugal.	Gomes E.
p3 B	Raman spectra of the carbonaceous materials from Ospa-Kitoy ultrabasic massif and Botogol graphite deposit (the East Sayan, Russia).	Moroz T.N.
p4 B	Raman spectroscopic detection of carotenoids in microorganisms with a focus on halophiles.	Novotna J.
p5 B	Application of Raman Spectroscopy to Burgess Shale-type Preservation.	Olcott Marshall A.
p6 B	Study of the formation of amber-like and other fossil resins by spectroscopic methods .	Rodriguez-Montoro Ó.
p7 B	Subsurface hydrous salts and obliquity cycle on Mars.	Wang A.
p8 B	Raman spectroscopy of Martian meteorites for future planetary exploration.	Weber I.

<b>Methodology and instrumentation</b>		
p1 MI	Exploring the feasibility of determining soil water contents on the Moon with a combined Raman/LIBS instrument.	Colin A.
p2 MI	Effect of the crushing process on Raman analyses: consequences for the Mars 2018 mission.	Foucher F.
p3 MI	ICA-based Algorithm for Automatic Pigment Mixtures Identification.	González-Vidal J.J.
p4 MI	The GL Gem Raman – a powerful tool in gem and mineral identification.	Kuehn J.W.
p5 MI	Multivariate analysis of Raman spectra for geological classification and identification: Application to Exomars Mission.	Lafuente B.
p6 MI	A simple statistical method for the pseudo-quantification of mineral phases within the ExoMars Raman RLS instrument.	Lopez-Reyes G.
p7 MI	Confocal Raman Microscopy applied Mineralogy, Cultural Heritage and Forensic Sciences.	Sawatzki J.
P8 M	A new metrology based on Raman spectrometry as a tool for on-line soil gas monitoring.	Taquet N.



<b>Cultural heritage</b>		
p1 CH	Raman characterization of medieval “pietra ollare” artifacts found in the archaeological site of Crocetta di Sant’Agata Bolognese (Italy).	Baita C.
p2 CH	Raman spectroscopy analysis of Paleolithic stone tools found in the “Las Palomas de Teba” and “Ardales” caves (Guadalteba county, Málaga, Spain).	Capel Ferrón C.
p3 CH	Raman study of artificially weathered medieval-type glass.	De Ferri L.
p4 CH	Micro-Raman spectroscopy and other analytical techniques in the study of ancient ceramics: the case of pottery from Mozia (Italy).	De Vito C.
p5 CH	Analysis of volcanic samples and soils of Pompeii through Raman spectroscopy assisted with elemental analysis.	Giakoumaki A.
p6 CH	Vibrational spectroscopy supporting gamma irradiation for preservation of cultural heritage artifacts.	Manea M.
p7 CH	FT-Raman and infrared spectroscopic analysis of some paintings attributed to Ioan Andreescu.	Manea M.
p8 CH	Application of micro-Raman spectroscopy to ancient Jordan potteries from the archaeological site of Khirbet al-Batrawy.	Medeghini L.
p9 CH	Raman and infrared reflection spectroscopic study of pre-Columbian Mesoamerican pottery.	Ostrooumov M.
p10 CH	Mineralogical characterization by micro-Raman of cultural heritage polychrome (antiquity to date) from Southern Spain.	Perez-Rodriguez J.L.
p11 CH	Study of the composition of residuals in grave goods from the necropolis of ‘Las Ruedas’ in Pintia by Raman Spectroscopy.	Prieto A.C.
p12 CH	In-situ Raman analysis of illustrations of the “Paregon Atlas” (1603) and “Geographicae Enarratione, Libri Octo” (1525).	Prieto A. C.
p13 CH	Analysis of pseudo-amorphous and crystalline phases in ancient pottery by using micro-Raman and FT-IR spectroscopy.	Shoval S.
p14 CH	Investigation and characterization of porcelain objects, discovered in Clairefontaine (Belgium), by means of Raman Spectroscopy and X-Ray Fluorescence Spectroscopy.	Van Pevenage J.
p15 CH	In situ Raman and XRF analysis of a 16th century maiolica tile floor.	Van Pevenage J.
p16 CH	Investigation of pigment degradation due to organic atmospheric pollutants: Raman spectroscopic analysis.	Vandenabeele P.
p17 CH	Raman spectroscopic study on ancient glass beads found in southern area of Thailand.	Won-in K.

<b>Experimentation</b>		
p1 E	The contribution of water to structural changes of silica gel under high pressure and temperature.	Arasuna A.
p2 E	Experimental determination of CO <sub>2</sub> diffusion coefficient in aqueous solutions under pressure via Raman spectroscopy at room temperature.	Belgodere C.
p3 E	Raman spectroscopy as a tool to study the solubility of gases in Europa's Ocean conditions.	Bonales L.J.
p4 E	Solubilities of H <sub>2</sub> O and CO <sub>2</sub> in liquid and vapour phases determined by in situ Raman spectroscopy.	Caumon M.-C.
p5 E	Real-time experiments by Raman spectroscopy of chloride structurations during the dehydration of brine.	Grandjean M.
p6 E	Precipitation sequence determined using natural and synthetic water from Rio Tinto in small system (droplets).	Guerrero J.
p7 E	In situ Raman spectroscopy identification of the S <sub>3</sub> <sup>-</sup> ion in gold-bearing fluids from synthetic fluid inclusions.	Jacquemet N.
p8 E	Water speciation in aluminosilicate glasses and melts investigated by Raman spectroscopy.	Le Losq C.
p9 E	The evolution of silica gel nanostructure by compression at room temperature.	Murai T.
p10 E	Decarboxylation of formic and acetic acids: experimental study via the silica capillaries.	Ong A.
p11 E	Visual Observations and Raman Spectroscopic Studies of Sub- and Supercritical Water Degradation of Chlorinated Organic Compounds in Fused Silica Capillary Reactor.	Pan Z.
p12 E	Raman spectroscopic study of calcium carbonate and calcium phosphate phases grown in silica hydrogel.	Sanchez-Pastor N.
p13 E	In-situ Raman spectroscopy study of iron sulfide minerals transformation at room temperature.	Wang M.

<b>Mineralogy, petrology, gemmology</b>		
p1 MG	Raman spectroscopy of feldspars in sediments and pottery.	Andò S.
p1 MG	Micro-Raman characterization of minerals in the tremolite-actinolite series: a method for the non-destructive study of jade.	Bersani D.
p3 MG	Combined microthermometric and Raman spectroscopic techniques to characterize the N <sub>2</sub> -CH <sub>4</sub> -CO <sub>2</sub> -H <sub>2</sub> O mixtures in the fluid inclusions of the quartz veins of the Logrosán granitic cupola (Cáceres, Spain).	Chicharro E.
p4 MG	Mineralogy of Iron Snow aggregates from an acidic lignite mine lake.	Ciobotă V.
p5 MG	Investigation of the Middle Eocene ironstones from Bahariya Depression, Western Desert, Egypt by means of micro-Raman spectroscopy.	Ciobotă V.
p6 MG	Refinement of the Raman spectrum of lithium chloride pentahydrate LiCl.5H <sub>2</sub> O in synthetic fluid inclusions.	Coquinot Y.
p7 MG	Rockbridgeite Inclusion in rock crystal from Galileia region, Minas Gerais, Brazil.	Faulstich F.R.L.
p8 MG	How to identify clinkers heterogeneity ? Application of Raman spectroscopy.	Gauthier A.
p9 MG	Raman spectroscopy of iron oxide magnetite powder.	Giannouli C.
p10 MG	Spectroscopic analyses: a tool for the health risk assessment of the atmospheric particulate matter derived from mine-tailing erosion.	Goienaga N.
p11 MG	First findings of nyerereite in mantle xenoliths from kimberlite: significance for petrogenesis of kimberlite.	Golovin A.
p12 MG	Is there any risk associated to the use of slag in forest tracks as filler material? Raman spectroscopy and SEM-EDS diagnosis.	Gomez-Nubla L.
p13 MG	Study of Oklo uranium deposit mineral: Influence of long-time radioactive environment on Uraninite structure.	Guimbretière G.
p14 MG	Analysis of cements from beachrock remnants in the Arrigunaga beach (Bilbao estuary, Bay of Biscay).	Iturregi A.
p15 MG	Single or multiple stage metamorphic events: Raman spectroscopic study of SiO <sub>2</sub> inclusions in garnet from the Kokchetav UHPM micaschists.	Korsakov A.V.
p16 MG	Raman investigation on phase transitions in plagioclase.	Mantovani L.
p17 MG	The origin of the green colour of the speleothems in Lantz cave (Navarra, north of Spain): molecular characterization by Raman spectroscopy.	Martinez-Arkarazo I.
p18 MG	Raman imaging of polyphase inclusions in clinopyroxene from UHPM calc-silicate rocks (Kokchetav Massif): Is kokchetavite anhydrous mineral?	Mikhno A.O.
p19 MG	NIR FT-Raman spectrum of alacranite, arsenic sulphide, from coal mine Pirine (Bulgaria).	Moroz T.N.
p20 MG	Micro-Raman spectroscopy of annealed Mali onyx agate and man-made analogues.	Petautschnig C.

p21 MG	Identification of impurities in gemological materials by means of photoluminescence using micro-Raman apparatus.	Petriglieri J.R.
p22 MG	Multiphase inclusions in topaz: unexpected daughter crystals.	Rondeau B.
p23 MG	Eitelite $\text{Na}_2\text{Mg}(\text{CO}_3)_2$ from melt inclusion in peridotite xenoliths of Udachanya-East kimberlite pipe (Siberian craton, Russia) – A new occurrence.	Sharygin I.S.
p24 MG	Analyzing the compositions of coal ashes by using Raman and FT-IR spectroscopy.	Shoval S.
p25 MG	Laser Raman spectroscopy analysis of carbonic fluid inclusions in ultrahigh-temperature metamorphic rocks.	Tsunogae T.
p26 MG	Raman Spectroscopic Mineralogical Characterisation of Richat structure (Mauritania).	Venegas G.
p27 MG	The application of Raman spectroscopy to the study of copper silicate minerals known as 'healing' minerals.	Xi Y.