



Proceedings of the Sixth Infrared and Raman Users Group Conference (IRUG6)

Florence, Italy March 29th – April 1st 2004

organized by Istituto di Fisica Applicata “*Nello Carrara*” IFAC – CNR

in collaboration with

Opificio delle Pietre Dure and Ente Cassa di Risparmio di Firenze

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IRUG6 Conference - Final Program

Florence 29th March – 1st April 2004

PALAZZO INCONTRI - SALA VERDE AUDITORIUM Via de' Pucci 1

Monday 29th March

09:00-10:00 **REGISTRATION** at location **Palazzo Incontri**

10:00-10:20 **WELCOME**

Letizia Paradiso (Ente Cassa di Risparmio di Firenze)

Cristina Acidini Luchinat (Director of Opificio delle Pietre Dure, Firenze)

Pier Luigi Emiliani (Director of Istituto di Fisica Applicata "Nello Carrara")

Marcello Picollo (local organizer IRUG6 Conference)

10:20-10:50 COFFEE BREAK

ORAL presentations

Moderator: Boris Pretzel (Victoria and Albert Museum, UK)

10:50-11:10 B. Price (Philadelphia Museum of Art, USA), K. Ehrman (Digital Bridgeway Inc., USA) *Promoting Global Access to the Infrared and Raman Users Group Spectral Database* p. 17

11:10-11:30 Y. Matsuda (Tohoku University of Art & Design, Japan) presented by M. Tsukada *Development of the in-house database system for artistic materials linked with FT-IR spectral library and its application to the conservation education* p. 25

11:30-11:50 S. Pierce (Department of Chemistry, Duke University, USA) *FTIR Methodologies for the Analysis of Contaminants Removed from Polychrome Statues with an Erbium:YAG Laser at 2.94 microns* p. 26

11:50-12:10 A. Vila (Facultat de Belles Arts, Universitat de Barcelona, Spain) *A fast procedure for fake Euro notes identification based on FTIR (ATR) technique. An example of prints characterization* p. 35

12:10-12:30 Discussion

12:30-14:00 LUNCH BREAK

Moderator: Janice Carlson (Philadelphia Museum of Art, USA)

14:00-14:20 S. Lake (Hirshhorn Museum and Sculpture Garden, Smithsonian Institution, USA) *Paul Thek's Fishman: IR spectroscopy of degraded latex* p. 36

14:20-14:40 M. Favaro (ICIS – CNR, Padua, Italy) *Identification of unknown acrylic resin applied on stone sculptures of Porta della Carta, Ducal Palace, Venice* p. 41

- 14:40-15:00 R.E. Ploeger and H.F. Shurvell (Department of Art, Queen's University, Canada) *Infrared analysis of material leached by water from acrylic paint films* p. 46
- 15:00-15:20 D. Scalarone (Department of Chemistry IPM, University of Turin, Italy) *Infrared spectroscopy monitoring of surfactant phase-separation and stability in waterborne organic coatings and acrylic artists' paints* p. 52
- 15:20-15:50 COFFEE BREAK
- Moderator:** Scott Williams (Canadian Conservation Institute, Canada)
- 15:50-16:10 J. Jonsson (Tate Gallery, UK) *Separation of acrylic paint components and their identification with FTIR spectroscopy* p. 58
- 16:10-16:30 J. Boon (FOM Institute AMOLF, The Netherlands) *Imaging microspectroscopy studies of paint cross sections* p. 66
- 16:30-16:50 M. Cotte (Centre de Recherche et de Restauration des Musées de France, Paris, France) *Synchrotron infrared microscopy of ancient biological and cosmetics material* p. 75
- 16:50-17:10 K. Helwig (Canadian Conservation Institute, Canada) presented by S. Williams *Analysis of the Materials of Several Canadian Artists Using Fourier Transform Infrared Spectroscopy* p. 83
- 18:00-19:30 *Welcome cocktail at Kent State University in Florence – Vicolo dei Cerchi 1*

Tuesday 30th March

Moderator: Francesca Casadio (Art Institute of Chicago, USA)

- 09:00-09:20 A. Schoenemann (The Getty Conservation Institute, USA) *The application of Raman and FTIR micro spectroscopy for the study of drying oils* p. 84
- 09:20-09:40 D. Thickett (Birkbeck College, University of London, UK) *The Analysis of Iron Corrosion Products with FTIR and Raman Spectroscopies* p. 86
- 09:40-10:00 K. Trentelman (Detroit Institute of Arts, Center for Conservation, USA) *Building a multi-dimensional Raman database: the effect of excitation wavelength and binding media on Raman spectra of artists' pigments.* p. 94
- 10:00-10:20 A. Zoppi (LENS, University of Florence, Italy) *Micro-Raman imaging of ceramics components* p.101
- 10:20-10:50 COFFEE BREAK

Moderator: Karen Trentelman (Detroit Institute of Arts, Center for Conservation, USA)

- 10:50-11:10 M. Leona (Metropolitan Museum of Art, USA) *Sub-nanogram level identification by Surface Enhanced Raman Scattering of alizarin from madder lakes found in works of art* p.105

11:10-11:30 D. de Faria (Laboratório de Espectroscopia Molecular University of São Paulo, Brazil) *Raman spectroscopy of Brazilian archaeological and ethnographic resins* p.113

11:30-11:50 H.G.M. Edwards (Dept of Chemical and Forensic Sciences, University of Bradford, UK) *Raman Spectroscopy Applied to Biomaterials in Art History and the Preservation of Cultural Heritage* p.121

11:50-12:10 P. Vandenabeele (Ghent University, Laboratory of Analytical Chemistry, Belgium) *The use of a Mobile Raman spectrometer for the in situ analysis of objects of art* p.127

12:10-12:30 Discussion

12:30-14:00 LUNCH BREAK

Moderator: Beth Price (Philadelphia Museum of Art, USA)

14:00-14:20 A. van Loon (FOM Institute AMOLF, The Netherlands) *Identification and localization of proteinaceous compounds in paint samples with infrared spectroscopic techniques - scope and limitations* p.130

14:20-14:40 R. Mazzeo (University of Bologna, Chemistry Department, Italy) *Examination of fresh and aged Chinese organic binding media using FTIR spectroscopy* p.137

14:40-15:00 M. Sato (Nara National Research Institute for Cultural Properties, Japan) *Microscopic FT-IR identification of ancient textile fibers, natural dyestuffs and Japanese lacquers* p.138

15:00-15:20 N. Vrinceanu ("Gh. Asachi" Technical University, Faculty Of Chemistry, Romania) presented by M. Picollo *Stabilization and protection of cellulosic supports with a photosensitive polymeric system* p.142

15:20-16:00 COFFEE BREAK

16:00-18:00 **Business Meeting**

18:00-19:30 *Tour Museum of San Marco – Piazza San Marco*

Wednesday 31st March

Moderator: Jaap Boon (FOM Institute AMOLF, The Netherlands)

09:00-09:20 S. de Groot (Netherlands Institute for Cultural Heritage, The Netherlands) *FTIR analysis of 4 paintings by Pierre-Auguste Renoir* p.143

09:20-09:40 J.F. García-martínez (Facultat de Belles Arts, Universitat de Barcelona, Spain) *Discrimination of contemporary artistic prints based on the FTIR analysis* p.149

09:40-10:00 H. Khanjian (The Getty Conservation Institute, USA) *The Study of Photographic Coatings Using Angle Resolved ATR-FTIR Spectrometry* p.154

- 10:00-10:20 T. van Oosten (Netherlands Institute for Cultural Heritage, The Netherlands) *The use of FTIR spectroscopy for the study of the influence of Impranil DLV and Plextol B, as impregnating agents, on the ageing of polyurethane (PUR) foams* p.155
- 10:20-10:50 COFFEE BREAK
- Moderator:** Oscar Chiantore (Department of Chemistry IPM, University of Turin, Italy)
- 10:50-11:10 D. Stulik (The Getty Conservation Institute, USA) *Identification of Natural and Synthetic Dyes and Colorants in Tinted Photographs* p.162
- 11:10-11:30 L. Balcerzak (IFAC – CNR, Florence, Italy) *Non-invasive Fibers Optic Reflectance MIR spectroscopic analysis of white painted layers* p.163
- 11:30-11:50 C. Miliani (ISTM – CNR, Perugia, Italy) *Reflectance FTIR study of altered calcium carbonate surface* p.169
- 11:50-12:10 S. Williams (Canadian Conservation Institute, Canada) *In-situ, mid-IR spectroscopic analysis of objects at museums using portable IR spectrometers* p.170
- 12:10-12:30 Discussion
- 12:30-14:00 LUNCH BREAK
- Moderator:** Marco Leona (Metropolitan Museum of Art, USA)
- 14:00-14:20 F. Casadio (Art Institute of Chicago, USA) *Decoration of Meissen Porcelain: Raman microscopy as an aid for authentication and dating* p.178
- 14:20-14:40 A. Cavicchioli (Laboratório de Espectroscopia Molecular-Instituto de Química-University of São Paulo, Brazil) *FT-Raman studies of thin films of natural varnishes* p.158
- 14:40-15:00 D. Bersani (Physics Department - University of Parma, Italy) *Raman and GC/MS investigation of Parmigianino's wall paintings in Santa Maria della Steccata church in Parma (Italy)* p.191
- 15:00-15:20 K. Smith (McCrone Associates, USA) *Raman Analysis of Native American Dyed Artifacts* p.195
- 15:20-15:50 COFFEE BREAK
- Moderator:** Francesca Piqué (The Getty Conservation Institute, Los Angeles, USA)
- 15:50-16:10 P.S. Middleton (Peterborough Regional College, UK) *Painters and Decorators in Roman Britain: Raman studies of Romano-British wall painting pigments and techniques* p.198
- 16:10-16:30 S. Denoël (European Center of Archaeometry, University of Liège, Belgium) *Comparative study of the pigments found in illuminated manuscripts of the 16th century in Belgium: study of a particular case the Gerard van der Stappen Book's of Hours* p.205

16:30-16:50 C. Ricci (Chemistry Department, University of Perugia, Italy) *Original and fake blue pigments from the church of S. Francesco in Montefalco painted by Benozzo Gozzoli: a spectroscopic approach* p.213

16:50-17:10 S. Pagès-Camagna (Centre de Recherche et de Restauration des Musées de France, France) *Synthesis and weathering process of Egyptian green: Structural characterisation by Raman microspectrometry of a synthetic copper silicate used as pigment* p.220

17:10-17:30 *Final remarks on oral presentations*

OPIFICIO delle PIETRE DURE – Biblioteca, Via Alfani 78

Thursday 1st April

09:30-12:00 *POSTER Session*

K. Andrikopoulos (Art Diagnosis Centre, Greece)
Vibrational Spectroscopy reveals the techniques implemented for the production of Hadra hydriai by the Rhodian laboratory (3rd –2nd century B.C. p.228

L. Appolonia (Soprintendenza Beni e Attività Culturali Val d'Aosta, Italy)
Use of Infrared Photoacoustic system in Cultural Heritage Analysis p.229

E. Carretti (Consortium CSGI, Department of Chemistry, University of Florence, Italy)
FTIR spectroscopy to monitor selective cleaning on wall painting surfaces p.239

F. Casadio (Art Institute of Chicago, USA)
A novel approach to an old problem: application of TG/FTIR for evaluating materials for storage and display cases p.244

E.M.Castellucci (LENS, University of Florence, Italy)
Evaluation of the analytical potential of Raman microscopy combined with elemental techniques p.246

A. Cosentino (University of Catania, Italy)
ColoRaman project: characterization of oil, tempera and fresco colors using Raman and Fluorescence Spectroscopies p.247

N. Ferrer (Serveis Científicotècnics.Universitat de Barcelona, Spain)
Characterization of ink components in ancient manuscripts by FTIR spectroscopy p.252

G. Giachi (Soprintendenza per i Beni Archeologici della Toscana, Florence, Italy)
Resin and pitch of Pinaceae wood in the findings of the ancient harbor of Pisa p.253

V. Hayez (Vrije Universiteit Brussel, Belgium)
Micro-Raman spectroscopy used for the study of corrosion products on copper alloys p.259

C. Herm (Dresden Academy of Fine Arts, Germany)
Infrared spectroscopic study of some more metal soaps p.267

- D. Jembrih-Simburger (Sciences an Technologies in Art, Academy of Fine Arts, Austria)
FTIR-spectra of iridescent Art Nouveau Glass Artifacts p.273
- D. Jones (Chemistry and Biochemistry Department, Cal Poly State University, USA) *Spectroscopic Analysis of a 4th-Century A.D. Roman Sarcophagus* p.277
- M. Maier (Departamento de Química Orgánica, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Argentina)
Applications of Fourier-Transform Infrared Spectroscopy (FTIR) to the study of pastes from an Argentinean Septentrional Patagonian archaeological site p.278
- J. Mass (Conservation Department, Winterthur Museum, Garden, and Library, USA)
Reflectance FTIR and Raman Microspectroscopy Studies of 19th Century Chinese Export Pith Paintings p.283
- M. Milosevich (Harrick Scientific Corporation, USA)
Video Barreliño p.284
- A. Miquel (Departament de Pintura-Facultat de Belles Arts-Universitat de Barcelona, Spain)
A systematic study of red paint layers degradation in artworks based on spectrophotometrical information p.288
- B. Pretzel (Victoria and Albert Museum, UK)
Infrared and Raman Users Group - Past Present, and Future p.294
- N. Salvadó (Dpt. D'Enginyeria Química. Universitat Politècnica de Catalunya, Spain) *The nature of medieval synthetic pigments* p.296
- A. Schaening (Sciences an Technologies in Art, Academy of Fine Arts, Austria)
Identification and Classification of synthetic organic pigments of a collection of 19th and 20th cent. by FTIR p.302
- M. Schreiner (Sciences and technologies in Art, Academy of Fine Arts, Austria)
A database of inorganic historical pigments p.306
- M. Tsukada (National Museum of Western Art, Japan)
Effect of formalin on animal glue – Preliminary study on the materials and techniques used in paintings of “Panreal Art Group” p.311
- 12:00-12:30 *Final remarks on poster presentations*
- 12:30 **End of IRUG6**