

Scientific Programme - *ECONOS/microCARS 2008*

(Updated: 01-05-2008)

Programme Time Table

Sunday 25.05.	Monday 26.05.	Tuesday 27.05.
	9:00 Joint Session I	9:00 Joint Session III
	9:00 E.O. Potma (microCARS Invited Speaker)	9:00 H. Hamaguchi (microCARS Invited Speaker)
	9:40 R.P. Lucht (ECONOS Invited Speaker)	9:40 E. Vartiainen (microCARS Invited Speaker)
	10:20-10:50 coffee/tea break	10:20-10:50 coffee/tea break
	CARS/Raman bioimaging	Multiplex CARS microspectroscopy
	fs-CARS spectroscopy	NLO spectroscopy in gases
	10:50 C. Otto	10:50 M. Cicerone
	A. Matemy	P.E. Bengtsson
	11:10 Ch. Brackmann	11:10 S.R. Keiding
	C. Serrat	D. Kozlov
	11:30 Z. Huang	11:30 M. Bonn
	A. Valeev	A. Kouzov
	11:50 A. Ridsdale	11:50 A. Volkmer
	G. Knopp	B. Lavorel
	12:10-14:00 lunch break	12:10-13:00 lunch break
	Joint Session II	Signal generation in NLO microscopy
	14:00 M. Motzkus (ECONOS Invited Speaker)	NLO detection of nanosystems
13:00-14:30 arrival / onsite registration	14:40 O. Katz	13:00 M. Marrocco
Tutorials on CARS/Raman microscopy	15:00 H.L. Offerhaus	13:20 H. Rigneault
14:30 A. Zheltikov (Invited Tutorial I)	15:20 N. Hayazawa	13:40 R. Ooi
	15:40-16:10 coffee/tea break	14:00 E. Beaurepaire
15:30 A. Zumbusch (Tutorial II)	Fast CARS imaging	14:20-14:40 coffee/tea break
	NLO in composite samples	Joint Session IV
	16:10 V. Lurquin	14:40 B. Attal-Tretout (ECONOS Invited Speaker)
	N. Tcherniega	15:20 A. Fedotov
16:30-17:00 coffee/tea break	16:30 S. Bernet	15:40 S. Brasselet
17:00 M. Diem (Invited Tutorial III)	S.M. Pershin	16:00 Closing
	16:50 break	16:10 COST and ECONOS business meetings
18:00-18:30 break	17:00 Poster session (snacks & drinks)	
18:30 Welcome address	18:30 Departure for Conference Dinner	
18:40 X.S. Xie (Invited Plenary Lecture)		
19:40 Welcome reception		

Sunday, 25th May 2008

1:00 pm – 2:30 pm Arrival / Onsite Registration

2:30 pm - 5:30 pm Tutorials on CARS/Raman microscopy

2:30 pm - 3:30 pm **A.M. Zheltikov** (Invited) (Lomonosov Moscow State University),
“Introduction to nonlinear optics and photonic crystal fibers (PCF's)”

3:30 pm - 4:30 pm **A. Zumbusch** (University of Konstanz),
“CARS microscopy: fundamentals and applications”

4:30 pm – 5:00 pm Coffee/Tea Break

5:00 pm - 6:00 pm **M. Diem** (Invited) (Northeastern University),
“Multivariate data analysis, and biological, medical and pharmaceutical applications of (linear) Raman microscopy”

6:00 pm – 6:30 pm Break

6:30 pm - 7:40 pm **Plenary Lecture**

6:30 pm – 6:40 pm Welcome Address

6:40 pm - 7:40 pm **X.S. Xie** (Invited) (Harvard University),
“CARS Microscopy: Chemical Imaging for Biology and Medicine”

7:40 pm Welcome Reception

Monday, 26th May 2008

9:00 am - 10:20 am **Joint Session I (WG 5)**

9:00 am - 9:40 am **E.O. Potma** (Invited) (University of California Irvine),
“Following atherosclerosis with CARS”

9:40 am - 10:20 am **R.P. Lucht** (Invited) (Purdue University),
“Recent Advances in Femtosecond and Resonance CARS for Gas-Phase measurements”

10:20 am – 10:50 am Coffee/Tea Break

10:50 am - 12:10 pm **ECONOS Session: Femtosecond CARS spectroscopy**

10:50 am - 11:10 am **A. Materny**, V. Namboodiri, J. Konradi, and A. Scaria (Jacobs University Bremen),
“Femtosecond Time-Resolved Coherent Anti-Stokes Raman Spectroscopy for the Investigation and Control of Molecular Dynamics in Different Electronic States of Molecules in the Gas Phase”

11:10 am - 11:30 am **C. Serrat**, M. Corbera, P. Martí, R. Pericas, and J. Biegert (Universitat de Vic, ICREA and ICFO),
“Modeling Quantum Control of Multiphoton Transitions and CARS”

11:30 am - 11:50 am V.G. Arakcheev, V.N. Bagratashvili, S.A. Dubyanskiy, V.B. Morozov, A.N. Olenin, V.K. Popov, and **A.A. Valeev** (Lomonosov Moscow State University and Russian Academy of Science),
“Spectral Structure of Compressed Gaseous and Near-Critical Carbon Dioxide in Nanopores”

11:50 am - 12:10 pm **G. Knopp**, A.M. Walser, M. Meisinger, P.P. Radi, M. Tulej, and T. Gerber (Paul Scherrer Institute),
“Spectral effects in dispersed off-resonant fs-transient gratings”

10:50 am - 12:10 pm **microCARS Session: CARS/Raman bioimaging (WG 5)**

10:50 am - 11:10 am **C. Otto** and V. Pully (University of Twente),
“Quantitative Raman Cytometry of Cells”

11:10 am - 11:30 am **C. Brackmann**, J. Norbeck, M. Åkeson, D. Bosch, C. Larsson, L. Gustafsson, and A. Enejder (Chalmers University of Technology),
“Imaging of Lipid Storage in Live Yeast Cells using CARS Microscopy”

11:30 am - 11:50 am F. Lu, W. Zheng, and **Z. Huang** (National University of Singapore),
“Heterodyne polarization coherent anti-Stokes Raman scattering (HP-CARS) microscopy for high contrast bioimaging”

11:50 am - 12:10 pm **A. Ridsdale**, A. Pegoraro, J.P. Pezacki, and A. Stolow (Stearns Institute for Molecular Sciences, Queen’s University Kingston, and University of Ottawa),

“Simple, High Performance Multimodal Coherent AntiStokes Raman Scattering (CARS) Microscopy based on a Two-Photon Microscope”

12:10 pm – 2:00 pm Lunch Break

2:00 pm - 3:40 pm **Joint Session II (WG 2)**

2:00 pm - 2:40 pm B. von Vacano and **M. Motzkus** (Invited) (Philipps-Universität Marburg),
“CARS microspectroscopy with shaped femtosecond pulses”

2:40 pm - 3:00 pm **O. Katz**, A. Natan, S. Rosenwaks, and Y. Silberberg (Weizmann Institute of Science and Ben Gurion University),
“Standoff detection of trace amounts of solids by nonlinear Raman spectroscopy using shaped femtosecond pulses”

3:00 pm - 3:20 pm S. Postma, A.C.W. van Rhijn, J.P. Korterik, J.L. Herek, and **H.L. Offerhaus** (University of Twente),
“CARS spectroscopy and microscopy around 3000 cm^{-1} using spectral phase shaping of pump and probe pulses”

3:20 pm - 3:40 pm **N. Hayazawa** and S. Kawata (RIKEN, CREST, and Osaka University),
“Tip-enhanced coherent anti-Stokes Raman spectroscopy and microscopy”

3:40 pm – 4:10 am Coffee/Tea Break

4:10 pm - 4:50 pm **ECONOS Session: NLO in composite samples**

4:10 pm - 4:30 pm **N.V. Tcherniega** and A.D. Kudryavtseva (Russian Academy of Sciences),
“Nonlinear Optical Effects in Photonic Crystals”

4:30 pm - 4:50 pm A.F. Bunkin and **S.M. Pershin** (Russian Academy of Sciences),
“Four-wave Mixing Spectroscopy of H₂O Para-isomers Selective Interaction with DNA in Aqueous Solutions”

4:10 pm - 4:50 pm **microCARS Session: Fast CARS imaging (WG 2)**

4:10 pm - 4:30 pm **V. Lurquin** (Leica Microsystems),
“CARS microscopy at video rates”

4:30 pm - 4:50 pm **S. Bernet**, Ch. Heinrich, Ch. Leidlmair, S. Khan, and M. Ritsch-Marte (Innsbruck Medical University),
“Recent applications of wide-field CARS microscopy”

4:50 pm – 5:00 pm Break

5:00 pm - 6:30 pm **Joint Poster Session**

ECONOS Posters:

F. Vestin and **P.-E. Bengtsson** (Lund University),
“Rotational CARS for simultaneous measurements of temperature and concentrations of N₂, O₂, CO, and CO₂ demonstrated in a CO/air diffusion flame”

A. Bolin, F. Vestin, D. Sedarsky, and **P. -E. Bengtsson** (Lund University),
“Investigation of high-resolution vibrational CARS thermometry”

L. De Dominicis (ENEA),

“Determination of the first hyperpolarizability tensor form of chiral carbon nanotubes with projector technique method.”

M. Fischer, J. Heinze, M. Müller, O. Diers, and D. Schneider (German Aerospace Center, DLR),
“Optical Diagnostics on a Catalytic Burner”

M. Flörsheimer, K. Kruse, R. Polly, B. Schimmelpfennig, R. Klenze, and T. Fanghänel (Forschungszentrum Karlsruhe and University of Heidelberg),
“Application of Sum Frequency Spectroscopy to Mineral/Electrolyte Interfaces in Environmental Geochemistry”

F. Grisch, N. Herlin-Boime, F. Lacour, L. Combemale, and B. Attal-Trétout (ONERA),
“CARS Analysis of Nanoparticle Synthesis Processes using Laser Pyrolysis”

V.P. Mitrokhin, A.B. Fedotov, **A.A. Ivanov**, M.V. Alfimov, and A.M. Zheltikov (Lomonosov Moscow State University and Russian Academy of Sciences),
“Coherent anti-Stokes Raman scattering microspectroscopy of silicon components with a photonic-crystal fiber frequency shifter”

S. Ivanova (Russian Academy of Sciences),
“Investigation of Lithium Niobate Crystals by Light Scattering Methods”

J. Kiefer, A. Meyerhoefer, T. Seeger, A. Leipertz, Z.S. Li, and M. Aldén (Universität Erlangen and Lund University)
“Polarization Spectroscopy for OH Detection in Flames probing Off-Diagonal Transitions”

H. Manaa, A. Al-Mulla, S. Makhseed, and F. Ibrahim (Kuwait University),
“Very low threshold optical limiting of novel phthalocyanine derivative”

M. Marrocco (ENEA),
“Criterion to Discriminate between Coherent and Incoherent Synthesis of Coherent Anti-Stokes Raman Spectra”

M. Marrocco (ENEA),
“Coherent Anti-Stokes Raman Spectroscopy of Molecular Hydrogen at High Temperatures: Effect of the Herman-Wallis factor”

G. McConnell (University of Strathclyde),
“Modelling Optimal Pulse-Shape Conditions for Improved Nonlinear Microscopy And Spectroscopy”

J. Hauer, T. Buckup, and **M. Motzkus** (Philipps Universität Marburg),
“Pump-DFWM as a Technique for Analyzing Structural and Electronic Evolution: Multidimensional Time-Resolved Dynamics near a Conical Intersection”

M. Tulej, M. Meisinger, G. Knopp, A.M. Walser, T. Gerber, and **P.P. Radi** (Paul Scherrer Institute),
“Degenerate and Two-Color Resonant Four-Wave Mixing of C₂⁻ in a Molecular Beam”

P.Schön, F. Servantes Munhoz, J. Wenger, and S. Brasselet (Institut Fresnel, Université Paul Cézanne Aix-Marseille III),
“Nonlinear SHG enhancement in isolated metal nano-apertures”

I. Verzhbitskiy, M. Chrysos, and F. Rachet, and A. Kouzov (Université d’Angers and St. Petersburg State University)
“Pressure Dependence of the Raman CO₂ Antisymmetric Stretch Overtone Band”

M.C. Weikl, S. Tedder, Y. Cong, T. Seeger, and A. Leipertz (Universität Erlangen),
“On the determination of CARS probe volume dimensions”

M.C. Weiki, Y. Cong, P. Joubert, J. Bonamy, T. Seeger and A. Leipertz (Universität Erlangen and Institut UTINAM, UMR CNRS 6213),
“Development of temperature and multi-species CARS”

S.P. Centeno, J.A. Hutchison, H. Odaka, R. Ando, A. Miyawaki, J. Hofkens, H. Uji-i (Universiteit Katholieke Leuven, RIKEN),
“Surface-enhanced Photoactivation Localization Microscopy of Dronpa on gold nanostructures”

microCARS Posters:

M. Åkeson, C. Brackmann, F. Svedberg, and A. Enejder (Chalmers University of Technology),
“Non-linear microscopy at Chalmers University of Technology”

D.A. Akimov, T. Meyer, S. Chatzipapadopoulos, G. Bergner, B. Dietzek, N. Tarcea, M. Schmitt, and J. Popp (Friedrich Schiller University, Institute of Photonic Technology, and University of Würzburg),
“Application of Laser Scanning Microscopy to Nonlinear Optical Imaging with Different Contrast Mechanisms”

M.T. Cicerone, Y.J. Lee, Y. Liu, and J. Sharping (NIST and University of California Merced),
“3-Color Signal Generation Facilitates Background-Free Broadband CARS Microscopy”

A. Downes, R. Mouras, and A. Elfick (University of Edinburgh),
“A versatile CARS microscope for high speed biological imaging”

N.L. Garrett, M. Whiteman, and J. Moger (University of Exeter),
“Monitoring Cellular Uptake of Nanoshells Using CARS”

M. Jurna, J.P. Korterik, C. Otto, J.L. Herek, and H.L. Offerhaus (University of Twente),
“Shot noise limited heterodyne imaging of CARS signals”

B. von Vacano, A. Horneber, C. Pohling, L. Meyer, and **M. Motzkus** (Philipps-Universität Marburg),
“Quantitative broadband multiplex CARS microscopy for material science applications”

B. von Vacano, T. Buckup and **M. Motzkus** (Philipps-Universität Marburg),
“Enabling femtosecond pulse compression and phase management in CARS microscopy by shaper-assisted collinear SPIDER”

G.Y. Nikolaeva, E.A. Sagitova, K.A. Prokhorov, and D.N. Kozlov (Russian Academy of Sciences),
“Micro-Raman Studies of Deformation Mechanism in Polymers: would Micro-CARS be a Complementary Technique?”

E. Ploetz, S. Laimgruber, and P. Gilch (Ludwig-Maximilians-Universität München),
“Femtosecond Stimulated Raman microscopy”

F. Billard, A. Colonna, C. Hadjur, and **H. Rigneault** (Institut Fresnel UMR 6133 Université Paul Cézanne Aix-Marseille III and Institut Carnot de Bourgogne UMR CNRS 5209 Université de Bourgogne),
“Coherent anti-Stokes Raman scattering to study water penetration in skin”

D. Gachet, F. Billard, and **H. Rigneault** (Institut Fresnel, UMR 6133, Université Paul Cézanne Aix-Marseille III),
“Focused Field Symmetries for Background-Free Coherent Anti-Stokes Raman Microscopy”

I.Rocha-Mendoza, W. Langbein and P. Borri (Cardiff University),
“Multimodal CARS Microscopy using a Femtosecond Laser Source and Spectral Focussing”

F. Servantes-Munhoz, D. Gachet, F. Billard, S. Brustlein, S. Brasselet, and H. Rigneault (Institut Fresnel, UMR 6133, Université Paul Cézanne Aix-Marseille III),
“Polarization Study of the Coherent Anti-Stokes Raman Scattering Emission”

E. Benkler, and **H. R. Telle** (Physikalisch-Technische Bundesanstalt),
“Strategies for quantum-limited signal detection in multiplex CARS microscopy”

A. Kovalev, P. Nandakumar, A. Muschielok, S. Busch, and **A. Volkmer** (University of Stuttgart),
“Vibrational microspectroscopy of biological systems based on Coherent Raman Scattering microscopy”

S.A. Malinovskaya and **V.S. Malinovsky** (Stevens Institute of Technology, MagiQ Technologies Inc.),
“Maximizing CARS coherence using adiabatic control methods”

6:30 pm Departure for Conference Dinner

Tuesday, 27th May 2008

9:00 am - 10:20 am Joint Session III (WG 1&5)

9:00 am - 9:40 am **Hiro-o Hamaguchi** (Invited), (University of Tokyo),
“Linear and Non-linear Raman Molecular Imaging of Living Cells”

9:40 am - 10:20 am **E.M. Vartiainen** (Invited), H.A. Rinia, M. Müller, and M. Bonn (Lappeenranta University of
Technology, University of Amsterdam and AMOLF),
“Data-adaptive CARS spectrum analysis – recovering the seemingly irrecoverable”

10:20 am – 10:50 am Coffee/Tea Break

10:50 am - 12:10 pm ECONOS Session: NLO spectroscopy in gases

10:50 am - 11:10 am F. Vestin, K. Nilsson, and **P.-E. Bengtsson** (Lund University),
“Validation of a rotational CARS model for carbon dioxide using highresolution
detection in the temperature range 294-1143 K”

11:10 am - 11:30 am **D.N. Kozlov** and P.P Radi(Russian Academy of Sciences and Paul Scherrer Institute),
“Study of Spectroscopic and Relaxation Characteristics of Methane Vibrational Overtone
States Using Laser-Induced Gratings”

11:30 am - 11:50 am X. Chen, T.B. Settersten and **A.P. Kouzov** (Sandia National Laboratories and St. Petersburg
State University,
“Time-Domain Two-Color Resonant Four Wave Mixing Spectroscopy as a Tool to Study
State-to-State Transfer Rates”

11:50 am - 12:10 pm Th. Vieillard, F. Chaussard, D. Sugny, **B. Lavorel**, and O. Faucher (Institut Carnot de
Bourgogne UMR 5209 CNRS),
“High density molecular gases in strong ultrashort laser fields: Alignment and collisional
relaxation”

10:50 am - 12:10 pm microCARS Session: Multiplex CARS microspectroscopy (WG 1&4)

10:50 am - 11:10 am **M.T. Cicerone**, Y.J. Lee, Y. Liu, J. Sharping (NIST and University of California Merced),
“Label-Free Imaging of Complex Biological Samples by Time-Resolved Broadband CARS
Microscopy”

11:10 am - 11:30 am H.U. Ulriksen, J. Thøgersen, J. Glückstad, **S.R. Keiding**, and H. Stapelfeldt (University of
Århus and DTU Roskilde),
“CARS microscopy of a Polystyrene Sphere in an Optical Manipulator”

11:30 am - 11:50 am **M. Bonn**, G. Rago, H. Rinia and M. Müller (AMOLF and University of Amsterdam),
“Quantitative multiplex CARS spectro-microscopy in lipid droplets and microfluidics”

11:50 am - 12:10 pm S. Busch, A. Muschielok, A. Kovalev, and **A. Volkmer** (University of Stuttgart),

- “CARS microspectroscopy of a single type-I collagen fibril”
- 12:10 pm – 1:00 pm Lunch Break
- 1:00 pm - 2:20 pm ECONOS Session: NLO detection of nanosystems**
- 1:00 am - 1:20 pm **A.F. Bunkin** and S.M. Pershin (Russian Academy of Sciences),
“Four-waves Mixing Spectroscopy of Single Wall Carbon Nanotubes Aqueous Suspensions in the Range 0-250 cm^{-1} ”
- 1:20 pm - 1:40 pm F.Masia, **W. Langbein**, and P. Borri (Cardiff University),
“Multi-photon Microscopy based on Resonant Four-Wave Mixing of Colloidal Quantum Dots”
- 1:40 pm - 2:00 pm **J. Moger**, B.D. Johnston, and C.R. Tyler (University of Exeter),
“Detecting Metal Oxide Nanoparticles in Biological Structures using CARS Microscopy”
- 2:00 pm - 2:20 pm **J. Kneipp** (Federal Institute for Materials Research and Testing, BAM),
“Nanosensors for biological applications based on surface-enhanced hyper Raman scattering (SEHRS)”
- 1:00 pm - 2:20 pm microCARS Session: Signal generation in NLO microscopy (WG 3)**
- 1:00 am - 1:20 pm **M. Marrocco** and E. Nichelatti (ENEA),
“MicroCARS in Fabry-Pérot Microcavities”
- 1:20 pm - 1:40 pm F. Billard, D. Gachet, and **H. Rigneault** (Institut Fresnel Mosaic group UMR CNRS 6133),
“Coherent anti-Stokes Raman scattering (CARS) in a microcavity”
- 1:40 pm - 2:00 pm **C.H.R. Ooi** (Korea University),
“Spectroscopy of Backscattered Femtosecond Coherent Anti-Stokes Raman Scattering for Remote Detection of Microparticles”
- 2:00 pm - 2:20 pm D. Débarre, N. Olivier, W. Supatto, M-C. Schanne-Klein, E. Farge, and **E. Beaurepaire** (Ecole Polytechnique Palaiseau CNRS, University of Oxford, and Institut Curie CNRS),
“Third-harmonic generation microscopy of biological and turbid media: contrast mechanisms and applications”
- 2:20 pm – 2:40 pm Coffee/Tea Break
- 2:40 pm - 4:00 pm Joint Session IV**
- 2:40 pm - 3:20 pm D. Messina, F. Grisch, N. Dorval, M. Cau, B. **Attal-Trétout** (Invited), A. Loiseau, C Scott, V. Krüger, and M. Tsurikov (ONERA, NASA, and DLR),
“Application of CARS to the diagnostic of pulsed plasma and nanotubes synthesis”
- 3:20 pm - 3:40 pm **A.B. Fedotov**, I.V. Fedotov, D.A. Sidorov-Biryukov, K.V. Dukel'skii, V.S. Shevandin, and A.M. Zheltikov (Lomonosov Moscow State University),
“Spectronanoscropy of photonic wires by parametrically coupled stimulated Raman sidebands”
- 3:40 pm - 4:00 pm N. Sandeau, L.L. Xuan, D. Chauvat, J.-F. Roch, and **S. Brasselet** (ENS Cachan and Institut Fresnel - MOSAIC group),
“Structural imaging in nano-objects using polarization resolved and defocused nonlinear microscopy”
- 4:00 pm Conference Closing
- 4:10 pm COST and ECONOS business meetings