



Invited speakers

Marina Carravetta - Simonetta Geninatti Crich - Iola Duarte - Roberto Gobetto - Vincenzo Venditti

Keynote speakers

Silvia Borsacchi - Fabio Carniato - Marco Fragai - Carla Isernia - Salvo Mamone - Michele Mauri -
Noemi Proietti - Marina Veronesi

Organizing Committee

Roberto Fattorusso - University of Campania
Carla Isernia - University of Campania
Gaetano Malgieri - University of Campania
Luigi Russo - University of Campania
Giovanna Valentino - University of Campania
Gianluca D'Abrosca - Link Campus University
Maria della Valle - CNR-IC
Martina Dragone - University of Campania
Clementina Acconcia - University of Naples Federico II

Scientific Committee

Michele Chierotti - University of Turin
Elisa Carignani - CNR-ICCOM-Pisa
Daniela Lalli - Università del Piemonte Orientale
Laura Ragona - CNR-SCITEC Milano
Antonio Randazzo - University of Naples Federico II
Valeria Righi - University of Bologna
Luigi Russo - University of Campania

Abstract submission: June 10th 2026
Attendance grants application: June 10th 2026
Early registration: July 10th 2026



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Venue

Università degli Studi della Campania

Dipartimento di Scienze e Tecnologie Ambientali Biologiche e Farmaceutiche

Via Vivaldi, 43

81100 Caserta

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*Dipartimento di Scienze e Tecnologie
Ambientali Biologiche e
Farmaceutiche*

The following speakers have so far agreed to give plenary lectures at the meeting:

Marina Carravetta (University of Southampton)

Iola Duarte (University of Aveiro)

Simonetta Geninatti Crich (University of Turin)

Roberto Gobetto (University of Turin)

Vincenzo Venditti (Iowa State University)

Winner of the GIDRM/GIRM Gold Medal 2026 (to be awarded)

The following keynote speakers have so far agreed to give lectures at the meeting:

Silvia Borsacchi, CNR-ICCOM-Pisa

Fabio Carniato, University of Piemonte Orientale

Marco Fragai, University of Firenze

Carla Isernia, University of Campania

Salvo Mamone, University of L'Aquila

Michele Mauri, University of Milano Bicocca

Noemi Proietti, CNR Roma

Marina Veronesi, IIT-Genova

53RD NATIONAL CONGRESS ON MAGNETIC RESONANCE

CASERTA 9-11 SEPTEMBER 2026

SCIENTIFIC PROGRAM

Wednesday September 9th

9:00-14:00	Registration	
10:00-11:30	Jeol satellite meeting	
11:30-13:00	Bruker satellite meeting	
13:00-14:00	Bruker/Jeol Lunch	
14:00-14:30	Opening (Room A2)	
	Plenary session (Room A2)	
	Chair: A. Mucci & M. R. Chierotti	
14:30-15:20	Plenary Lecture 1 GIDRM/GTRM gold medal award Giovanna Musco (Biomolecular NMR Unit, IRCCS Ospedale San Raffaele) <i>Do we still need N(avigating) M(ysterious) R(elationships)?</i>	
	Plenary Lecture 2	
	Chair: V. Righi	
15:20-16:05	Iola Duarte (University of Aveiro) <i>Metabolic phenotyping of biomimetic 3D cell models using NMR-based metabolomics</i>	
16:05-17:00	Coffee break + Poster session (ODD abstract numbers)	
	Parallel session A (Room A2)	Parallel session B (Room B2)
	Chair: V. Righi	Chair: R. Fattorusso
17:00-17:30	Veronesi M. NMR in drug discovery: from hit identification to Exo-metabolomics	Mauri M. Time-Domain NMR: mobility and interfacial phenomena across multiple scales
17:30-17:45	Marino C. Untargeted ¹ H NMR-based metabolomics and high-pressure liquid chromatography analyses reveal sexual dimorphism in the serum metabolic profiles of patients with different genetic forms of Parkinson's disease	Petrella G. An HMBC-based J-modulation sequence for the measurement of nJHC coupling constants: application to CORROLE systems
17:45-18:00	Krid M.A.R. Advancing Food Analysis: Amino Acid Quantification by NMR and Deep Learning	Petrone M. Suppressing proton competition to reveal intrinsic Zn(II) chelation in L-carnosine mimics by solution NMR
18:00-18:15	Gallo A. Exploring the urinary metabolomic fingerprint of human cytomegalovirus: a ¹ H-NMR study on congenitally infected newborns	Schiavina M. The Synergy of Multiple Receivers and Heteronuclear Detection to Draw a Complete Picture of Intrinsically Disordered Proteins in Action
18:15-18:30	Vigni G. Integrated chemometric analyses of NMR, HPLC-MS and IRMS data for geographical origin authentication	Yang Zhou A. Next-Generation EPR: Combining High-Performance Q Band Instrumentation with Artificial Intelligence Enhanced Spectral Processing
	Plenary session (Room A2)	
	Chair: S. Borsacchi	
18:30-18:45	ABCS/Nanalysis Sponsorship Lecture: V. Vanoli <i>Quantitative Characterization of Lignin by Benchtop ³¹P NMR</i>	
18:45-19:30	Plenary Lecture 3 Marina Carravetta (University of Southampton) <i>Solid state NMR on supported palladium nanoparticles</i>	

Thursday September 10th

	Plenary session (Room A2) Chair: L. Russo	
8:45-9:30	Plenary Lecture 4 Vincenzo Venditti (Iowa State University) <i>Beyond Structures: Solution NMR as a method for resolving dynamic mechanisms across biological and heterogeneous catalysts</i>	
9:30-9:45	Jeol Sponsorship Lecture: M.J. Smith <i>Improving the detection limits</i>	
	Under 35 GIDRM Award (Room A2) Chair: M. Chierotti	
9:45-10:15	Gaia Meoni (University of Florence) <i>NMR-based metabolomics: a journey between health and food</i>	
10:15-10:30	Bruker Sponsorship Lecture: M. Mayzel <i>Spatially resolved NMR spectroscopy: principles and applications</i>	
10:30-11:20	Coffee break + Poster session (EVEN abstract numbers)	
	Parallel session A (Room A2) Chair: D. Lalli	Parallel session B (Room B2) Chair: G. Musco
11:20-11:50	Carniato F. Investigation of transition metal-based MRI probes: a combined ¹ H NMR relaxometry, EPR and computational study	Isernia C. A glimpse in the metal ion selectivity rules: Zn(II), Cd(II) and Co(II) interplay with different protein coordination spheres in determining variable thermal stability and folding scenarios
11:50-12:05	Scarciglia A. A Rare Earth Elements recovery strategy using natural diopside and ¹ H-NMR relaxometry	Ciabini C. Monitoring disordered protein-ligand interactions through NMR
12:05-12:20	Micocci S. Visualize & Destabilize: boronated carboranyl-curcuminoids as theranostic candidates in Alzheimer's MRI-guided Neutron Capture Therapy	Santoro F. Integrating NMR structure determination and ligand optimization of the CIAP2-BIR1 protein
12:20-12:35	Caporale A. S. The association between grey matter microstructural characteristics and cerebral oxidative metabolism is altered in Multiple Sclerosis	Macchia L. NMR mapping of Cyclophilin D pockets using ultra-low molecular weight fragments
12:35-12:50	Piña Marcos J. N. Targeted liposomes for combined boron neutron capture therapy and MRI visualization in non-small cell lung cancer	Lippi C. NMR-based solvent paramagnetic enhancement experiments on IDPs
12:50-14:10	Lunch + Poster session (ODD abstract numbers)	
	Plenary session (Room A2) Chair: L. Russo	
14:10-14:55	Plenary Lecture 5 Simonetta Geninatti Crich (University of Torino) <i>Fast Field-Cycling Relaxometry as a Tool to Investigate Pathological States through Water Dynamics in Tissues</i>	
14:55-15:10	Stelar Sponsorship Lecture: I. Sarwara <i>Molecular Dynamics of Animal- and Plant-Based Cheese Matrices via Temperature-Dependent FFC-NMR Relaxometry</i>	
15:10-15:25	Magritek Sponsorship Lecture: L. Bottalico <i>Unlocking New Capabilities in Benchtop NMR: High-Resolution Analysis at 100 MHz</i>	
	Segre-Capitani Fellowship Chair: L. Ragona	
15:25-15:40	Simone Fabbian (University of Padova) <i>Oncogenic non-coding RNA targeted by small molecules: a NMR-based approach</i>	
15:40-17:00	Coffee break + Poster session (EVEN abstract numbers)	
16:15-17:00	GTRM assembly (Room A2)	
17:00-19:00	GIDRM assembly + announcement of poster competition winners	
19:30	social dinner	

Friday September 11th

	Plenary session (Room A2) Chair: E. Carignani
8:45-9:30	Plenary Lecture 6 Roberto Gobetto (University of Torino) <i>Solid State NMR tools in the evaluation of weak interactions</i>

	Parallel session A (Room A2) Chair: A. Randazzo	Parallel session B (Room B2) Chair: D. Lalli
9:30-10:00	Mamone S. Rational optimization of [1- ¹³ C] pyruvate sabre hyperpolarization through catalyst design, kinetic modelling, and temperature control	Proietti N. Single-sided NMR: strengths and weaknesses
10:00-10:15	Mosca F. Structural investigation of Braun protein transpeptidation inhibitors in Gram-negative bacteria	Pierigè M. Accessing dynamics of sbr compounds by variable temperature ¹ H FC NMR and DFMSE experiments
10:15-10:30	Gado I. RNA mimic in HUR-ligand studies: insights from STD-NMR and protein-based NMR techniques	Conti L. In-Situ Single-Sided NMR profiling to assess cleaning treatments on XI-Century wall paintings
10:30-10:45	Cesaroni S. Exploring ¹ H-NMR data extraction potential in metabolomics: unveiling an opioid signature	Ceccon A. Reactive adduct intermediates and solvent-cage effects in azo-initiated oxidation of cinnamic acid derivatives revealed by solution NMR spectroscopy
10:45-11:00	Parafioriti M. Modulating heparanase activity with heparan sulfate mimetics: insights from NMR and molecular dynamics into structure–function relationships	Napolitano E. Metabolomic insights into the protective mechanisms of the NGF mutant CHF6467 in an Alzheimer’s disease cell model

11:00-11:30	Coffee break
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	Parallel session A (Room A2) Chair: G. Malgieri	Parallel session B (Room B2) Chair: E. Carignani
11:30-12:00	Fragai M. NMR-based characterization for the design, stability studies, and delivery control of biopharmaceuticals	Borsacchi S. Probing structure, dynamics and light-induced effects in halide perovskites via Solid State NMR and NQR
12:00-12:15	Dragone M. A ¹⁹ F NMR structural characterization of selumetinib and trametinib β-cyclodextrin inclusion complexes	Scarperi A. Solid-State NMR insights into hydration, framework flexibility, and guest dynamics in calf-20
12:15-12:30	Barbero M. T. Structural and Dynamic features of diastereomeric (Deep) Eutectic Systems (DIADES)	Sabena C. ¹⁴ N Solid-State NMR quadrupolar products as quantitative probes of hydrogen-bond environments in pyridinic solids
12:30-12:45	Bolognesi T. NMR strategies for multidomain intrinsically disordered proteins: application to the SARS-CoV-2 nucleocapsid reveals structure, dynamics, and binding mechanisms	Ghelardi A. Structural insights into a new dual-drug co-crystal characterised by NMR crystallography and electron diffraction

	Plenary session (Room A2) Chair: L. Ragona & M. Chierotti
12:45-13:25	Poster competition winner lectures
13:25-13:30	Closing

13:30-14:30	Lunch
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¹H-NMR METABOLOMICS FOR FARMING SYSTEM AUTHENTICATION: CASE STUDIES ON ITALIAN RICE AND CAULIFLOWER

Roberto Penasa,^a Federico Brigante,^a Pavel Solovyev,^a and Luana Bontempo^a

^aFondazione Edmund Mach, via Mach 1, 38098 San Michele all'Adige, Trento

E-mail: roberto.penasa@fmach.it

Keywords:

¹H-NMR, conventional and organic agriculture, metabolomics markers.

Agricultural authentication is increasingly critical as global demand for organic products grows, driven by consumer health and environmental concerns. This study demonstrates the efficacy of ¹H-NMR-based metabolomics in discriminating between organic and conventional farming systems through two distinct case studies: Italian rice and cauliflower.

In the first study, NMR metabolomic fingerprinting combined with multivariate statistics (PCA, HCA, and OPLS-DA) successfully classified Italian brown and white rice samples according to cultivation practice [1]. Specific metabolites, including amino acids (aspartate, lysine, leucine, and tryptophan), sugars (maltose, sucrose, and glucose), and purines (adenosine, guanosine, and oxypurinol), were identified as key markers for rice authentication. Quantitative analysis revealed that organic samples were characterized by higher levels of amino acids and nitrogenous compounds, while conventional brown rice was uniquely distinguished by high purine content.

The second case study utilized ¹H-NMR targeted metabolomics to characterize cauliflower corymbs over two consecutive years [2]. The approach accurately classified farming systems (conventional, organic, and agroecological), identifying choline, isobutyrate, formate, and alanine as robust markers independent of the cultivation year. Similar to the rice study, organic cauliflower exhibited higher nutritional quality, with significantly higher concentrations of organic acids and nitrogen-containing compounds. In contrast, conventional farming practices in both matrices tended to favor higher carbohydrate concentrations, likely due to the immediate availability of synthetic nitrogen and reduced pest stress.

Together, these findings underscore the analytical robustness, reproducibility, and high-throughput potential of ¹H-NMR spectroscopy for food traceability. By establishing distinct metabolic signatures for organic produce across different species, NMR-based metabolomics provides a powerful and efficient tool for routine quality control and regulatory oversight in the food industry.

References

- [1] F. Brigante, Z. Giannioti, P. Solovyev, L. Bontempo, *Appl. Food Res.*, **5** 101083 (2025).
- [2] F. Brigante, P. Solovyev, S. Fabroni, G. Campanelli, F. Montemurro, L. Bontempo, *J. Food Compos. Anal.* **138**, 107018 (2025).