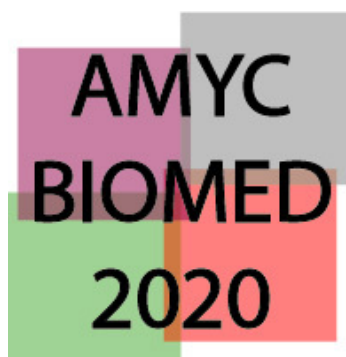
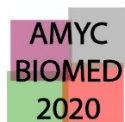


e-BOOK OF ABSTRACTS



AMYC-BIOMED 2020
Autumn Meeting for Young Chemists in Biomedical Sciences



13-14 October 2020 - Virtual conference
ZOOM Platform

Organizing Institution

Department of Excellence of Pharmacy (2018-2022), University of Naples Federico II

Organizing Committee

Stefano Cinti (**Chair**) (University of Naples Federico II)
Margherita Brindisi (University of Naples Federico II)
Francesco Saverio Di Leva (University of Naples Federico II)
Sveva Pelliccia (University of Naples Federico II)
Stefano Tomassi (University of Naples Federico II)

Scientific Committee

Monica Mattarozzi, University of Parma
Can Dincer, University of Freiburg
Maria Teresa Giustiniano, University of Naples Federico II
Sergio Valente, University of Rome Sapienza
Francesca Selmin, University of Milan
Michele Schlich, IIT

We would like to thank all the speakers and participants for their contributions!

PROGRAMME

All the speakers will show their research on ZOOM.

The meeting can be followed on YouTube

thanks to Gruppo Giovani - Società Chimica Italiana.

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FOR ATTENDING THE MEETING!

SESSION 1, 13 Oct 2020
(10-12:35 CET)

POSTER SESSION, 13 Oct 2020
(12:35-15 CET)

Chair

Stefano Cinti, University of
Naples "Federico II"

Monica Mattarozzi, University of
Parma

10:00 - 10:05

Institutional welcome: **Prof.**
Angelo Izzo, Vice-Director of
Dept. of Pharmacy, University of
Naples "Federico II"

SESSION 2, 13 Oct 2020
(15-17:40 CET)

Chair

Sveva Pelliccia, University of
Naples "Federico II"

Francesco Saverio Di Leva,
University of Naples "Federico
II"

15:00 - 15:35

Plenary lecture (30 min + 5 min
Q/A): **Prof. Robert Hider**, King's
College London, UK

Title: **Clinical Applications of**

SESSION 3, 14 Oct 2020
(10-12:40 CET)

Chair

Stefano Tomassi, University of
Naples "Federico II"

Margherita Brindisi, University
of Naples "Federico II"

Michele Schlich, IIT

10:00 - 10:35

Plenary lecture (30 min + 5 min
Q/A): **Prof. Helder A. Santos**,
University of Helsinki, Finland

Title: **Tumor Exosome-Based**

10:05 - 10:40

Plenary lecture (30 min + 5 min Q/A): **Prof. Arben Merkoçi**, Institut Català de Nanociència i Nanotecnologia (ICN2), Barcelona, Spain.

Title: **Nanobiosensors for diagnostics applications**

10:40 - 11:05

Invited Talk (20 min + 5 min Q/A): **Dr. Valentina Pifferi**, University of Milan, Italy.

Title: **Searching for the right electrode-analyte combination for neurotransmitters electroanalysis**

ORAL COMMUNICATION SESSION (10 min + 2 min Q/A)

11:05 - 11:17

Simone Cavalera, University of Turin, Italy

Title: **A multi-target lateral flow immunoassay enabling the specific and sensitive detection of total antibodies to SARS CoV-2**

11:17 - 11:29

Nicolò Riboni, University of Parma, Italy

Title: **Solvent-Assisted Paper Spray Ionization Mass Spectrometry: a Novel Setup for the Analysis of Biomolecules and Biofluids**

Hydroxypyridinones

15:35 - 16:00

Invited Talk (20 min + 5 min Q/A): **Dr. Vittorio Limongelli**, University of Lugano, Switzerland

Title: **Ligand binding free-energy calculations with Funnel-Metadynamics**

ORAL COMMUNICATION SESSION (10 min + 2 min Q/A)

16:00 - 16:12

Serena Della Volpe, University of Pavia, Italy

Title: **Novel compounds targeting RNA binding protein HuR: from fragments to promising molecular hybrids**

16:12 - 16:24

Emanuela Berrino, University of Florence, Italy

Title: **Synthesis and Evaluation of Carbonic Anhydrase Inhibitors with Carbon Monoxide Releasing Properties for the management of Rheumatoid Arthritis**

16:24 - 16:36

Eliana Lo Presti, CNR-Milan, Italy

Title: **Total synthesis of an SPPS-compatible Labionin**

Nanoparticles and Artificially Cloaked Viral Nanovaccines for Chemo-immunotherapy Applications

10:35 - 11:00

Invited Talk (20 min + 5 min Q/A): **Dr. Rossella Dorati**, University of Pavia, Italy

Title: **Topical Drug Delivery For Preventing Hyperthrophic Scars In Burns**

ORAL COMMUNICATION SESSION (10 min + 2 min Q/A)

11:00 - 11:12

Mattia Tiboni, University of Urbino "Carlo Bo", Italy

Title: **Manufacturing pharmaceutical forms with 3D printing**

11:12 - 11:24

Elia Bari, University of Pavia, Italy

Title: **From Mesenchymal Stem Cells to cell products: secretome pharmaceuticalization as a safe and effective biological medicinal product**

11:24 - 11:36

Maria Cristina Cringoli, University of Trieste, Italy

Title: **Bioadhesive supramolecular hydrogel from**

11:29 - 11:41

Vincenzo Mazzaracchio,

University of Rome "Tor Vergata",
Italy

Title: **A miniaturized all-solid
state ion-selective electrode
based on a Carbon Black
Transducer for sodium
detection in sweat**

11:41 - 11:53

Giovanni Valenti, University of
Bologna, Italy

Title: **New insights into the
mechanism of coreactant
electrogenerated
chemiluminescence facilitating
enhanced bioanalytical
performance**

11:53 - 12:05

Swarnapali De Silva

Indrasekara, University of North
Carolina at Charlotte, Charlotte,
USA

Title: **Interface engineering of
plasmonic nanoparticles
towards field-transferable
biosensors**

SLIDE & TALK SESSION (5 min,
NO Q/A)

12:05 - 12:10

Daniel Rojas, University of
Teramo, Italy

Title: **Development of a
Prussian blue-based electrode**

derivative

16:36 - 16:48

Sebastiano Intagliata,

University of Catania, Italy

Title: **Synthesis, binding, and
functional properties of new
benzylpiperazine derivatives
as selective σ_1 receptor
ligands**

16:48 - 17:00

Giulia Bononi, University of
Pisa, Italy

Title: **Second-generation
benzoylpiperidine derivatives
as potent, reversible and
selective MAGL inhibitors**

SPONSOR TALK

17:00 - 17:10

Marta Da Pian, Elsevier

Title: **Reaxys Education:
learning chemistry with Reaxys**

SLIDE & TALK SESSION (5 min,
NO Q/A)

17:10 - 17:15

Irina Stefanelli, University of
Naples "Federico II", Italy

Title: **Integrating artificial
intelligence and chemical
synthesis for the discovery of
new antinflavivirus agents**

17:15 - 17:20

Andrea Citarella, University of

**short D,L-peptides and
fibronectin-derived motif**

11:36 - 11:48

Sara Demartis, University of
Sassari, Italy

Title: **Preparation and
preliminary characterization of
transfersomes for Rose Bengal
topical delivery**

11:48 - 12:00

Yang Shi, RWTH Aachen
University Clinic, Germany

Title: **Engineering polymeric
micelles and vesicles for
cancer chemo-immunotherapy**

SLIDE & TALK SESSION (5 min,
NO Q/A)

12:00 - 12:05

Giulia Chindamo, University of
Turin, Italy

Title: **Calcium phosphate-
coated lipid nanoparticles for
bone delivery**

12:05 - 12:10

Marzia Bini, University of
Perugia, Italy

Title: **Development of bioactive
inorganic coating for
orthopedic implants**

12:10 - 12:15

Nicola D'Avanzo, University of
Catanzaro, Italy

array for in situ detection of H₂O₂ from living cells

12:10 - 12:15

Giovanni Ventura, University of Bari, Italy

Title: **Cyanocobalamin-cisplatin conjugate with nucleoside monophosphates: an in-vitro LC-ESI-MS/MS study**

12:15 - 12:20

Jessica Brandi, University of Verona, Italy

Title: **Lactic Acid Bacteria and Skin health: a proteomic study**

12:20 - 12:25

Maria Laura Alfieri, University of Naples "Federico II", Italy

Title: **From polydopamine to new mussel-inspired adhesive functional biopolymers**

12:25 - 12:30

Giuseppe Arrabito, University of Palermo, Italy

Title: **Bioanalysis in Femtoliter Scale Printed Artificial Systems**

12:30 - 12:35

Jennifer Quinchia, University of Antioquia, Colombia

Title: **Electrochemical signal amplification strategy based on photosensitive polymer-encapsulated enzymes**

Messina, Italy

Title: **Peptide-based α,α -Difluoromethyl Ketone as new inhibitor of Pathogenic Coronavirus Mpro**

17:20 - 17:25

Alessio Maria Caramiello, Polytechnic of Milan, Italy

Title: **Synthesis and Biological Evaluation of Novel Hydantoin-based Peptidomimetics**

17:25 - 17:30

Eleonora Gianquinto, University of Turin, Italy

Title: ***In Silico* Identification of Cross-Class Inhibitors against Clinically Relevant Beta-Lactamases**

17:30 - 17:35

Marilisa Pia Dimmito, University of Chieti-Pescara, Italy

Title: **Discovery of Orexant and Anorexant Agents with Indazole Scaffold Endowed with Peripheral Antiedema Activity**

17:35 - 17:40

Chiara Bacchella, University of Pavia, Italy

Title: **Dynamic nature of copper binding to amyloid- β species.**

Title: **DOX-loaded niosomes for potential application in breast cancer**

12:15 - 12:20

Teresa Silvestri, University of Naples "Federico II", Italy

Title: **Controlled protein release from poly(lactic-co-glycolic acid) (PLGA)-based microparticles for intravitreal administration**

12:20 - 12:25

Patrizia Nadia Hanieh, University of Rome "Sapienza", Italy

Title: **Nanoemulsion formulation: A fundamental issue**

12:25 - 12:30

Diego Romano Perinelli, University of Camerino, Italy

Title: **Physical state of doxorubicin in Doxil[®] liposomal formulation: effect of temperature**

CLOSING REMARKS

12:30 - 12:40

AMYC-BIOMED 2020 Organizing Committee

12:35 - 15:00

YouTube Streaming --> [Here](#)

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Naples Federico II

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The eBook of Abstract of the meeting is available!

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AMYC-BIOMED 2020

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Bioanalysis in Femtoliter Scale Printed Artificial Systems

Giuseppe Arrabito,^{1*} Bruno Pignataro¹

¹*Department of Physics and Chemistry - Emilio Segrè, University of Palermo, Viale delle Scienze, Building 17, Palermo, 90128 Italy*

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Keywords: bioanalysis, biomolecular condensates, DNA, molecular crowding, printing.

Printing has fueled the development of a new class of artificial biosystems for the qualitative and quantitative determination of bioanalytes [1]. In particular, the multiscale organization (from nanometers to millimeters) and multiplexed molecular composition (DNA, proteins, lipids, polymers) of such platforms enable the determination of molecular interactions in conditions mimicking/redesigning those of the living systems. Since the development of microarrays platforms [2], the downsizing of the “analyzable” feature down to femtoliter (fL) scales has permitted to develop new researches in the field of molecular condensates/confinement. Herein, two relevant examples of fL-scale systems will be discussed, highlighting their applications in bioanalysis. The first one includes molecular inks containing DNA nanoswitches or CYP2E1 catalyzed enzymatic reactions produced by inkjet printing fL-scale compartments into mineral oil drops [3]. The downscaling triggers the organization of a confined environment at the water/oil interface, resulting in up-concentration effects and molecular crowding. The employ of fluorescence lifetime imaging permits to analyze downscaling induced effects, namely up-concentration, heterogeneity and molecular proximity (Figure 1A). The second example consists in fL-scale droplets produced by microchannel cantilever spotting (μ CS) of inks containing single strand DNA (ssDNA) into porous substrates (nylon), resulting in oligonucleotides microarrays for sensing applications [4]. The downscaling to fL-scale imbibition into porous substrates highlights an intriguing and complex process controlled by the interplay of spreading, evaporation and capillary effects, being facilitated by glycerol additive in the ink. The DNA sequences functionality is demonstrated by hybridization with a fluorolabeled complementary sequence, producing a double strand sequence (dsDNA). The signal distribution in the spot is homogeneous and allows for the optical detection of spotted oligonucleotides down to few tents of zeptomoles (Figure 1B).

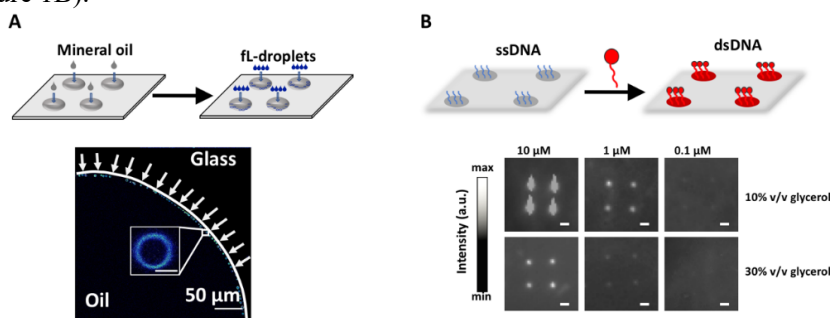


Figure 1. Printing fL-scale analytical platforms. (A) Scheme of the printing process (top) and fluorescence images (bottom) of fL-scale droplets injection into nL-scale mineral oil drops. Scale bar in the inset in the bottom is 2 microns. (B) Imbibition of ssDNA-rich fL-scale droplets into porous nylon by μ CS and hybridization with a complementary sequence (top). The hybridization process is studied at different ssDNA and glycerol concentrations (bottom).

References

- [1] G. Arrabito, V. Ferrara, A. Bonasera, B. Pignataro, *Small* 2020, 16, 1907691.
- [2] R.P. Ekins, F.W. Chu, *Clin. Chem.* 1991, 37, 1955.
- [3] G. Arrabito, F. Cavaleri, A. Porchetta, F. Ricci, V. Vetri, M. Leone, B. Pignataro, *Adv. Biosyst.* 2019, 3, 1900023.
- [4] G. Arrabito, V. Ferrara, A. Ottaviani, F. Cavaleri, S. Cubisino, P. Cancemi, Y. P. Ho, B. R. Knudsen, M. S. Hede, C. Pellerito, A. Desideri, S. Feo, and B. Pignataro, *Langmuir* 2019, 35, 17156.