

## Protein-Based Affinity Capillary Electrophoresis for Enantioseparation of Calcium Channel Blockers

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The development of separation methods for chiral compounds has been an interesting field in pharmaceutical research, particularly the use of proteins as the binding agent. In this study, the enantioselectivity of calcium channel blockers was investigated using affinity capillary electrophoresis, with human serum as a chiral selector. For this purpose, positively charged of racemic drugs, amlodipine and verapamil were selected as chiral drug models. As the sample was introduced in the capillary electrophoresis system, enantiomer bound to human serum albumin in different extents. Baseline separation was achieved in bare-fused silica capillary with a 20 mM phosphate buffer pH 7.4, at 15 kV applied voltage and 25 °C. The difference in apparent mobility shifts of enantiomers corresponds to the resolution value of 1.0-3.9. Association constant of the enantiomers was determined using nonlinear regression. *R*-(+)-verapamil performed to be bound stronger to serum albumin compared with *S*-(-)-verapamil. The  $K_A$  value of *S*-(-)-amlodipine in the racemic mixture was found to be higher than its antipode. In addition to this, a close agreement with the *S*-(-)- enantiomer was achieved for amlodipine.

**Keywords:** enantioseparation, affinity capillary electrophoresis, human serum albumin, chiral selector

### Acknowledgements

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# i T P 2019

September 1-4

26<sup>th</sup> International Symposium on Electroseparation  
and Liquid Phase-Separation Techniques



## BOOK OF ABSTRACTS

**TOULOUSE**

September 1-4, 2019

France

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26<sup>th</sup> International Symposium on  
Electro separation and Liquid Phase-Separation Techniques

**University Paul Sabatier - TOULOUSE - France**

## TABLE OF CONTENTS

Toulouse	2
Welcome Words	3
ITP Symposium History	4
International Scientific Committee	5
Exhibitors	6
Floor Plan	7
Social Program	8
Awards	9
Lunch Seminars	10
Short Courses	11
Scientific Program	12
Plenary Lectures, Keynotes & Oral Presentations	17
Poster Index	109

## WELCOME WORDS

Welcome to the 26<sup>th</sup> international Symposium on Electro-separation and Liquid-Phase Separation Techniques, ITP 2019 !

We are pleased to welcome you at the University Paul Sabatier, Toulouse, for the **International Symposium on Electro- and Liquid Phase- Separation Techniques (ITP 2019)**. The ITP series was inaugurated in Belgium in 1979, and is one of the most recognized international meeting addressing the latest issues and innovations in all areas of electro- and liquid phase-separations techniques.

The ITP Symposium series provide a forum for high-level scientific exchanges between analytically oriented scientists from the whole world in a friendly atmosphere. The University of Toulouse, one of the oldest in Europa, was founded in 1229 and is one of the most famous in France (rank #5 in France according to the Times Higher Education in 2018). It is located in the south of France, where the "art de vivre" is well-known. Medieval city, Renaissance city, Age of Enlightenment city, city of rugby, city of aviation, city hosting 110,000 students and 7,000 researchers, city of the good food and wines. A city where the ITP fellows will remain for a long time

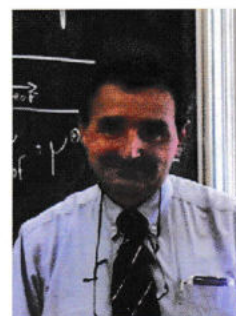
We will open this Symposium by thanking you for your valuable contribution and participation. We would like also to thank our sponsors for their generous support.

Welcome to ITP 2019 ! Welcome in Toulouse !



**Pr. Hervé COTTET**  
Université de Montpellier

Co chairmen



**Pr. François COUDERC**  
Université de Toulouse



# ITP SYMPOSIUM HISTORY



<b>o.</b>	<b>Year</b>	<b>Chair(s)</b>	<b>Place (Country)</b>
1	1979	A. Adam & C. Schots	Baconfoy (Belgium)
2	1980	F.M. Everaerts	Eindhoven (The Netherlands)
3	1982	C.J. Holloway	Gosslar (Germany)
4	1984	Z. Prusik	Hradec Kralove (Czechoslovakia)
5	1986	F.M. Everaerts	Maastricht (The Netherlands)
6	1988	E. Kenndler	Vienna (Austria)
7	1990	D. Kaniansky	Tatranska Lomnica (Czechoslovakia)
8	1992	S. Fanali	Rome (Italy)
9	1994	F. Kilar	Budapest (Hungary)
10	1996	B. Gas	Prague (Czech)
11	1998	P.G. Righetti	Venice (Italy)
12	2000	D. Kaniansky & E. Kenndler	Bratislava (Slovak) – Vienna (Austria)
13	2002	M.L. Riekkola	Helsinki (Finland)
14	2004	S. Fanali & M.G. Quaglia	Rome (Italy)
15	2006	G. Peltre	Paris (France)
16	2008	V. Cucinotta	Catania (Italy)
17	2010	Z. El Rassi	Baltimore, MD (USA)
18	2011	B. Chankvetadze	Tbilisi (Georgia)
19	2012	Z. El Rassi	Baltimore (USA)
20	2013	A. Cifuentes & J. Hernández-Borges	Puerto de la Cruz (Spain)
21	2014	M. Tavares & E. Carrilho	Natal (Brazil)
22	2015	M.-L. Riekkola & Heli Sirén	Helsinki (Finland)
23	2016	Z. El Rassi & Blanca Lapizco-Encinas	Minneapolis (USA)
24	2017	M. Markuszewski	Sopot (Poland)
25	2018	K. Otsuka	Kyoto (Japan)

# INTERNATIONAL SCIENTIFIC COMMITTEE

**Ana Maria Garcia-Campaña** (Grenade, Spain)

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## Organization



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# SCIENTIFIC PROGRAM

Sunday, 1<sup>st</sup> September 2019

Auditorium Marthe Condat		Council Room	
		<b>Publishing workshop for young scientists</b> Blanca Lapizzo-Encinas, Rochester Institute of Technology, Editor in Chief of ELECTROPHORESIS Hermann Wätzig, Technical University of Braunschweig, Editor in Chief of ELECTROPHORESIS Danielle Flemming, Wiley/Wiley-VCH publisher Weinheim, Managing Editor	14:00-15:00 SC 02
		<b>Short Course: Data processing in capillary electrophoresis</b> Pavel Dubsy & Magda Dohunová Faculty of Science, Charles University, Prague, Czech Republic	15:00-17:00 SC 04
17:15	<b>OPENING SESSION</b> Chairs: Hervé Cottet - IBMM, University of Montpellier, France, Francois Couderc - University Paul Sabatier, Toulouse, France		
17:30-18:15 PL 01	<b>Instrumentation and Applications of Epitachophoresis</b> František Foret - Institute of Analytical Chemistry, Czech Academy of Sciences, Brno, Czech Republic		
18:15-18:30	<b>Social event honouring Ziad El Rassi</b> Supported by Wiley and ELECTROPHORESIS		
18:30-20:00	<b>Welcome reception</b>		18:30-20:00



Monday, 2<sup>nd</sup> September 2019

Auditorium Marthe Condat		Council Room	
08:30	<b>OPENING SESSION</b> Chairs: Hervé Cottet - IBMM, University of Montpellier, France, Francois Couderc - University Paul Sabatier, Toulouse, France		
08:40	<b>PLENARY SESSION</b> Chairs: Bohuslav Gas - Charles University, Prague, Czech Republic, Hanno Stutz - University of Salzburg, Austria		
8:40-9:25 PL 02	<b>Transient Incomplete Separation Facilitates Finding Accurate Equilibrium Dissociation Constant, <math>K_d</math>, of Protein-Small Molecule Complex</b> Sergey N. Krylov - York University, Toronto, Canada		
09:30	<b>Affinity Capillary Electrophoresis</b> Chairs: Bohuslav Gas - Charles University, Prague, Czech Republic, Hanno Stutz - University of Salzburg, Austria	<b>Liquid Chromatography 1</b> Chairs: Carlos D Garcia - Clemson University, South Carolina, USA, Koji Otsuka - Kyoto University, Japan	09:30
9:30-9:55 KN 01	<b>Affinity Capillary Electrophoresis for Reliable Ligand Binding Assays</b> Hermann Wätzig - Technical University, Braunschweig, Germany	<b>Fast and efficient isolation of human biomacromolecules by immunoaffinity chromatography with monolithic disk columns</b> Marja-Liisa Riekkola - University of Helsinki - Finland	9:30-9:55 KN 02
9:55-10:20 KN 03	<b>Partial filling affinity capillary electrophoresis for study of noncovalent (bio)molecular interactions</b> Václav Kašička - Institute of Organic Chemistry and Biochemistry, Czech Academy of Sciences, Prague, Czech Republic	<b>Design of Monolithic Column Precursors and Their Post Polymerization Modifications with Various Ligands for Use in Liquid Phase Separation Techniques</b> Ziad El Rassi - Oklahoma State University, Stillwater, USA	9:55-10:20 KN 04
10:20-10:35 OP 01	<b>Assignment of complex species by affinity capillary electrophoresis: the case of Th(IV)-desferrioxamine B</b> Vladimir Sladkov - Institut de Physique Nucléaire, IN2P3-CNRS, Université Paris-Sud, Université Paris-Saclay, Orsay, France	<b>Simple analytical device for determination of aflatoxins using thin-layer chromatography imaging with a smartphone</b> Chanida Puangpila - Department of Chemistry, Faculty of Science, Chiang Mai University, Chiang Mai, Thailand	10:20-10:35 OP 02
10:35-10:50 OP 03	<b>Development of Affinity Electrophoretic Method for Analysis of Molecular Interactions in Lipid Nano-Membrane</b> Yukihiro Okamoto - Graduated School of Engineering Science, Osaka University, Osaka, Japan	<b>Use of Cyclofructans, Cyclodextrins and Amino Acid Ester-Based Ionic Liquids in EKC and HPLC for Improved Chiral Separations</b> Constantina Kaprissi-Christodoulou - Department of Chemistry, University of Cyprus, Nicosia, Cyprus	10:35-10:50 OP 04

# Monday, 2<sup>nd</sup> September 2019 (next)

10:50-11:30	<b>Coffee break</b>		10:50-11:30
11:30	<p style="text-align: center;"><b>Bioanalytical (1)</b></p> <p style="text-align: center;"><small>Chairs: Ziad El Rassi - Oklahoma State University, Stillwater, USA František Foret - Institute of Analytical Chemistry, Czech Academy of Sciences, Brno, Czech Republic</small></p>	<p style="text-align: center;"><b>MS and Liquid Chromatography (2)</b></p> <p style="text-align: center;"><small>Chairs: David Chen - University of British Columbia, Vancouver, Canada, Marja-Liisa Riekkola - University of Helsinki, Finland</small></p>	11:30
11:30-11:55 <b>KN 05</b>	<p style="text-align: center;"><b>Nanomaterials based electrochemical detectors in microchips electrophoresis for (bio) analytical applications</b></p> <p style="text-align: center;"><small>Alberto Escarpa - Universidad de Alcalá, Spain</small></p>	<p style="text-align: center;"><b>Chiral and Conformational Analysis by Trapped Ion Mobility Spectrometry</b></p> <p style="text-align: center;"><small>Govert W. Somsen - Vrije University of Amsterdam, The Netherlands</small></p>	11:30-11:55 <b>KN 06</b>
11:55-12:20 <b>KN 07</b>	<p style="text-align: center;"><b>Unique Microscale Separations Using Specific Interactions</b></p> <p style="text-align: center;"><small>Koji Otsuka - Kyoto University, Japan</small></p>	<p style="text-align: center;"><b>Evaluation and comparison of different separation techniques coupled to ion-mobility mass spectrometry for the deciphering of molecular networks</b></p> <p style="text-align: center;"><small>Marianne Fillet - University of Liege, Belgium</small></p>	11:55-12:20 <b>KN 08</b>
12:20- 12:35 <b>OP 05</b>	<p style="text-align: center;"><b>Selection of DNA aptamers based on separation of DNA-protein complexes from DNA library using Ideal-Filter Capillary Electrophoresis (IFCE)</b></p> <p style="text-align: center;"><small>Svetlana M. Krylova - York University, Toronto, Ontario, Canada</small></p>	<p style="text-align: center;"><b>Linear Retention Index in Liquid Chromatography: New Approach for the Quality Control of Furocoumarins in Cosmetics and Food</b></p> <p style="text-align: center;"><small>Adriana Arigo - University of Messina, Polo Annunziata, Messina, Italy</small></p>	12:20- 12:35 <b>OP 06</b>
12:35- 12:50 <b>OP 07</b>	<p style="text-align: center;"><b>DNA Thermal Stability Decreases with Increasing Solvent Viscosity</b></p> <p style="text-align: center;"><small>Nancy Stallwagen - University of Iowa, Iowa City, IA, USA</small></p>	<p style="text-align: center;"><b>Evaluation of column dispersion in isocratic and gradient HPLC based on the behaviour of a set of compounds</b></p> <p style="text-align: center;"><small>Maria-Celia Garcia Alvarez Coque - University of Valencia, Burjassot, Spain</small></p>	12:35- 12:50 <b>OP 08</b>
12:50-13:05 <b>OP 09</b>	<p style="text-align: center;"><b>Multiple Modes Capillary Electrophoresis : The Efficient Technology For Aptamers Selection And Bioanalysis</b></p> <p style="text-align: center;"><small>Feng Gu - School of Life Science, Beijing Institute of Technology, Beijing, China</small></p>	<p style="text-align: center;"><b>Study of the retention mechanisms of bisphenols on reversed phase U-HPLC columns by molecular modeling and Artificial Neural Networks</b></p> <p style="text-align: center;"><small>Jean-Christophe Garrigues - University Paul Sabatier, Toulouse, France</small></p>	12:50-13:05 <b>OP 10</b>
13:00-13:40	<b>Lunch seminar SCIEX (Auditorium Grignard)</b>		13:00-13:40
13:40-14:40	<b>Poster session</b>		13:40-14:40
14:40	<p style="text-align: center;"><b>Fundamentals (1)</b></p> <p style="text-align: center;"><small>Chairs: Doo Soo Chung - Institute Seoul National University, SNU Department of Chemistry, Rep. of Korea, Sergey Krylov - York University, Toronto, Canada</small></p>	<p style="text-align: center;"><b>Particles / Polymers analysis</b></p> <p style="text-align: center;"><small>Chairs: Javier Hernández Borges - University of La Laguna, Tenerife, Canary Islands, Spain, Myriam Taverna - University of Paris Sud, France</small></p>	14:40
14:40-15:05 <b>KN 09</b>	<p style="text-align: center;"><b>Electromigration in micro and nanoscale</b></p> <p style="text-align: center;"><small>Bohuslav Gaš - Charles University, Prague, Czech Republic</small></p>	<p style="text-align: center;"><b>Particle separation and assessment with electric fields</b></p> <p style="text-align: center;"><small>Bianca H. Lapizco-Encinas - Rochester Institute of Technology, USA</small></p>	14:40-15:05 <b>KN 10</b>
15:05-15:30 <b>KN 11</b>	<p style="text-align: center;"><b>Simplicity, as the key for analytical methodologies</b></p> <p style="text-align: center;"><small>Carlos D Garcia - Clemson University, South Carolina, USA</small></p>	<p style="text-align: center;"><b>Free solution capillary electrophoresis to characterize proteins, drug carriers or rice, and to monitor drug loading and digestion</b></p> <p style="text-align: center;"><small>Patrice Castignolles - Western Sydney University, Australia</small></p>	15:05-15:30 <b>KN 12</b>
15:30-15:45 <b>OP 11</b>	<p style="text-align: center;"><b>What Sherlock sorely missed: the EVA technology for Cultural Heritage exploration</b></p> <p style="text-align: center;"><small>Pier Giorgio Righetti - Department of Chemistry, Politecnico di Milano, Milano, Italy</small></p>	<p style="text-align: center;"><b>An Understanding of the Biological Roles of Glycoproteins through Reliable Quantitation of both Glycans and Glycopeptides</b></p> <p style="text-align: center;"><small>Yehia Mechref - Department of Chemistry and Biochemistry, Texas Tech University, Lubbock, USA</small></p>	15:30-15:45 <b>OP 12</b>
15:45-16:00 <b>OP 13</b>	<p style="text-align: center;"><b>Investigation of cell mobility and deformability</b></p> <p style="text-align: center;"><small>Karel Klepárník - Institute of Analytical Chemistry of the Czech Academy of Sciences, Brno, Czech Republic</small></p>	<p style="text-align: center;"><b>Nanofluidic Isolation, Detection and Manipulation of Single Nanoparticles and Extracellular Vesicles</b></p> <p style="text-align: center;"><small>Yan Xu - Department of Chemical Engineering, Graduate School of Engineering, Osaka Prefecture University, Japan</small></p>	15:45-16:00 <b>OP 14</b>
16:00-16:40	<b>Coffee break</b>		16:00-16:40
16:40	<p style="text-align: center;"><b>PortASAP COST and Portable CE session</b></p> <p style="text-align: center;"><small>Chairs: Václav Kašička - Institute of Organic Chemistry and Biochemistry, Czech Academy of Sciences, Prague, Czech Republic, Yoann Ladner - University of Montpellier, France</small></p> <div style="text-align: center;">  </div>	<p style="text-align: center;"><b>Bioanalytical (2)</b></p> <p style="text-align: center;"><small>Chairs: Ana M. Garcia-Campaña - University of Granada, Spain, Frederic Robert - SEBIA, Evry, France</small></p>	16:40
16:40-17:05 <b>KN 13</b>	<p style="text-align: center;"><b>Open source hardware in chemical analysis: Tools or toys?</b></p> <p style="text-align: center;"><small>Guillaume Erny - University of Porto, Portugal</small></p>	<p style="text-align: center;"><b>HPLC and cylindrical PAGE purification of RNA aptamers with single nucleotide resolution</b></p> <p style="text-align: center;"><small>Li Niu - University at Albany, New York, USA</small></p>	16:40-17:05 <b>KN 14</b>
17:05-17:20 <b>OP 15</b>	<p style="text-align: center;"><b>Open source capillary electrophoresis device for quality control of medicines</b></p> <p style="text-align: center;"><small>Samuel Roth - Head of Chemical Analysis Services, School of Engineering and Architecture of Fribourg, Fribourg, Suisse</small></p>	<p style="text-align: center;"><b>Preclinical Pharmacokinetic Exploration of Novel Combination for the Treatment of Prostate Cancer Using a Validated UHPLC-QTOF-MS Method</b></p> <p style="text-align: center;"><small>David Paul - St. James College of Pharmaceutical Sciences- India</small></p>	17:05-17:20 <b>OP 16</b>
17:20-17:35 <b>OP 17</b>	<p style="text-align: center;"><b>Portable centrifugal microfluidic platforms for on-site analysis of herbicides</b></p> <p style="text-align: center;"><small>Mercedes Vasquez - School of Chemical Sciences, National Centre for Sensor Research, Dublin City University, Glasnevin, Ireland</small></p>	<p style="text-align: center;"><b>Direct counting of exosomes in a culture medium with laser-induced fluorescence</b></p> <p style="text-align: center;"><small>Takashi Kaneta - Department of Chemistry, Graduate School of Natural Science and Technology, Okayama University, Okayama, Japan</small></p>	17:20-17:35 <b>OP 18</b>
17:35-17:50 <b>OP 19</b>	<p style="text-align: center;"><b>Digital microfluidics - analytical open-source hardware</b></p> <p style="text-align: center;"><small>Jelena Gorbatsova - Centre of Microfluidics, KBI, TalTech, Tallinn, Estonia</small></p>	<p style="text-align: center;"><b>Quantitative proteomics of exosomes secreted by liver cells</b></p> <p style="text-align: center;"><small>Djuro Josic - Juraj Dobrila University, Pula, Croatia</small></p>	17:35-17:50 <b>OP 20</b>
17:50-18:05 <b>OP 21</b>	<p style="text-align: center;"><b>Using portable CE instruments for determining banned compounds in situ</b></p> <p style="text-align: center;"><small>Mihkel Kallurand - Tallinn University of Technology, Tallinn, Estonia</small></p>	<p style="text-align: center;"><b>Determination of Exosomal Membrane Proteins CD63 by Capillary Electrophoresis</b></p> <p style="text-align: center;"><small>Yumeki Tani - Department of Chemistry, Graduate School of Natural Science and Technology, Okayama University, Okayama, Japan</small></p>	17:50-18:05 <b>OP 22</b>
19:00-20:00	<b>Basilica Saint-Sernin organized tour</b>		19:00-20:00



**Tuesday, 3<sup>rd</sup> September 2019**

<b>Auditorium Marthe Condat</b>		<b>Council Room</b>	
<b>08:30</b>	<b>OPENING SESSION</b> Chairs: Hervé Cottet - IBMM, University of Montpellier, France, Francois Couderc - University Paul Sabatier, Toulouse, France		
<b>08:40</b>	<b>PLENARY SESSION</b> Chairs: Marianne Fillet - University of Liege, Belgium, Georges Nouadje - SEBIA, Evry, France		
<b>8:40-9:25</b> <b>PL 03</b>	<b>Capillary electrophoresis mass spectrometry for top-down analysis of large proteins</b> David Chen - University of British Columbia, Vancouver, Canada		
<b>09:30</b>	<b>Bioanalytical (3)</b> Chairs: Marianne Fillet - University of Liege, Belgium, Georges Nouadje - SEBIA, Evry, France	<b>Young Session (1)</b> Chairs: Patricia Castignolles - Western Sydney University, Australia, Guillaume Emy - University of Porto, Portugal	<b>09:30</b>
<b>9:30-9:55</b> <b>KN 15</b>	<b>Alliances of different CE and CE-MS approaches for the PTM characterization of allergens</b> Hanno Stutz - University of Salzburg, Austria	<b>Metabolomics, a key technology in the emerging field of gut microbiota</b> Carolina Simó - Institute of Food Science Research (CIAL), Madrid, Spain	<b>9:30-9:55</b> <b>KN 16</b>
<b>9:55-10:10</b> <b>OP 23</b>	<b>A fully automated stalling-out assisted liquid-liquid extraction (A-SALLE) procedure coupled with on-line stacking for the analysis of tyrosine kinase inhibitors (TKIs) in human plasma</b> Yoann Ladner - University of Montpellier, France	<b>Imaged capillary isoelectric focusing coupled to mass spectrometry: online ICIEF-ESI-MS of monoclonal antibodies (mAb)</b> Johannes Schlecht - Faculty of Chemistry, Aalen University, Aalen, Germany	<b>9:55-10:10</b> <b>OP 24</b>
<b>10:10-10:25</b> <b>OP 25</b>	<b>Capillary Electrophoresis for Quantitative Analysis of Dried Blood Spot Samples</b> Pavel Kubáň - Institute of Analytical Chemistry, Czech Academy of Sciences, Brno, Czech Republic	<b>Albuminome, a new way to discover new disease biomarkers: Alzheimer's Disease as a study case</b> Emilie Rossi - Institut Galien Paris Sud, UMR8612, Protein and Nanotechnology in Analytical Science (PNAS), CNRS, Univ. Paris-Sud, Université Paris-Saclay, Châtenay-Malabry, France	<b>10:10-10:25</b> <b>OP 26</b>
<b>10:25-10:40</b> <b>OP 27</b>	<b>Purpose-made CE instrumentation for pharmaceutical and diagnostic applications</b> Thanh Duc Mai - Institut Galien Paris Sud, UMR 8612, Protein and Nanotechnology in Analytical Science (PNAS), CNRS, Univ. Paris-Sud, Univ. Paris-Saclay, Châtenay-Malabry, France	<b>Low-cost paper-origami DNA microfluidics for rapid microbial analysis</b> Zhugen Yang - Cranfield Water Science Institute, Cranfield University, Bedfordshire, United Kingdom	<b>10:25-10:40</b> <b>OP 28</b>
<b>10:40-10:55</b> <b>OP 29</b>	<b>Determination of drugs of abuse in oral fluid by capillary electrophoresis using fluorescence detection</b> Piret Saar-Reismaa - Department of Chemistry and Biotechnology, Tallinn University of Technology, Tallinn, Estonia.	<b>Ultra-miniaturized weak affinity chromatography for protein-ligand interaction study: application to membrane proteins, targets of high pharmaceutical interest</b> Lucile Lecas - Université de Lyon, Institut des Sciences Analytiques, UMR 5280, CNRS, Université Lyon 1, Villeurbanne, France	<b>10:40-10:55</b> <b>OP 30</b>
<b>10:55-11:30</b>	<b>Coffee break</b>		<b>10:55-11:30</b>
<b>11:30</b>	<b>Bioanalytical (4)</b> Chairs: Frederic Ginot - Picometrics Technologies, Labège, France, Jörg Kutter - University of Copenhagen, Denmark	<b>Young Session (2)</b> Chairs: Blanca H. Lapizco-Encinas - Rochester Institute of Technology, USA, Li Niu - University at Albany, New York, USA	<b>11:30</b>
<b>11:30-11:55</b> <b>KN 17</b>	<b>Capillary electromigration methods: a real alternative in food safety?</b> Ana M. Garcia-Campaña - University of Granada, Spain	<b>The challenge of plastic migrant analysis using nanomaterials</b> Javier Hernández Borges - University of La Laguna, Tenerife, Canary Islands, Spain	<b>11:30-11:55</b> <b>KN 18</b>
<b>11:55-12:10</b> <b>OP 31</b>	<b>Immobilization of enzymes on magnetic particles: recent experience with sulfotransferase and aldehyde oxidase</b> Ann Van Schepdael - University of Leuven, Pharmaceutical Analysis, Leuven, Belgium.	<b>Study and characterization of antigen-adjuvant interactions in vaccines by frontal analysis continuous capillary electrophoresis (FACCE)</b> Camille Malburet - IBMM, University of Montpellier, CNRS, ENSCM, Montpellier, France	<b>11:55-12:10</b> <b>OP 32</b>
<b>12:10-12:25</b> <b>OP 33</b>	<b>Characterization of the polyphenolic profile from different cultivars of Brassica juncea by comprehensive two-dimensional liquid chromatography coupled to mass spectrometry</b> Katia Arena - Farmaceutiche ed Ambientali, University of Messina -Messina, Italy	<b>µLAS Technology for RNA Separation</b> Bayan Chami - LAAS-CNRS, Toulouse, France	<b>12:10-12:25</b> <b>OP 34</b>
<b>12:25-12:40</b> <b>OP 35</b>	<b>Capillary Electrophoresis and Contactless Conductivity Detection for In Situ Analysis of Samples from Ocean Worlds</b> Mauro Sergio Ferreira Santos - Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California	<b>Metabolome/Glycome Analysis of Microscale Biological Samples by Capillary Electrophoresis-Laser Induced Fluorescence / Mass Spectrometry Coupled with a Large-volume Dual Preconcentration Technique</b> Takayuki Kawai - RIKEN Center for Biosystems Dynamics Research, Osaka, Japan	<b>12:25-12:40</b> <b>OP 36</b>
		<b>The Development of Portable Illegal Drug of Abuse Analyzer: From Idea to Product</b> Jekaterina Mazina-Sinkar - Chemistry and Biotechnology Institute, Tallinn University of Technology, Tallinn, Estonia	<b>12:40-12:55</b> <b>OP 38</b>
<b>12:55-13:30</b>	<b>Lunch seminar AGILENT TECHNOLOGIES (Auditorium Grignard)</b>		<b>12:55-13:30</b>
	<b>ITP permanent Scientific Committee (VIP room)</b>		
<b>13:30-14:30</b>	<b>Poster session</b>		<b>13:30-14:30</b>
<b>14:30-19:30</b>	<b>Walled city of Carcassonne visit</b>		<b>14:30-19:30</b>
<b>20:00-23:00</b>	<b>Gala dinner - Hôtel Dieu - Toulouse</b>		<b>20:00-23:00</b>

## Wednesday, 4<sup>th</sup> September 2019

Auditorium Marthe Condat		Council Room	
09:00	<b>Bioanalytical (5)</b> Chairs: Christian Neusüss - Aalen University, Germany, Govert W. Somsen - Vrije University of Amsterdam, The Netherlands	<b>AFSEP session (1)</b> Chairs: Jean-Christophe Garrigues - Université Paul Sabatier, Toulouse, France, Pascal Cardinael - Université de Rouen, France	09:00
9:00-9:25 KN 19	<b>Taylor Dispersion Analysis in Biomedical Analysis: Sizing, Interaction Studies and Quantification of Biopharmaceuticals</b> Jesper Østergaard - University of Copenhagen, Denmark	<b>Capillary Electrophoresis, an efficient technique for Drug Screening related to protein aggregation diseases</b> Myriam Taverna - University of Paris Sud, France	9:00-9:25 KN 20
9:25-9:40 OP 37	<b>Sizing of pharmaceutical lipid-based drug delivery systems by Taylor dispersion analysis: monitoring enzymatic lipolysis</b> Joseph Chamieh - IBMM, University of Montpellier, CNRS, ENSCM, Montpellier, France	<b>Enhancing the robustness of your CE-MS data with ROMANCE: electrophoretic mobility made easy</b> Victor Gonzalez-Ruiz - Analytical Sciences, School of Pharmaceutical Sciences, Universities of Geneva and Lausanne, Switzerland	9:25-9:40 OP 40
9:40-9:55 OP 39	<b>Review of Efficient Procedures to Prevent Band Leaking in Toroidal Capillary Electrophoresis (a Quasi-continuous Circulating Layout to Perform Electrokinetic Separations)</b> Tarsio B. Ledur-Kist - Institute of Biosciences, Federal University Rio Grande do Sul, Porto Alegre, Brazil	<b>Polyelectrolyte multilayers coatings for the separation of proteins by capillary electrophoresis: influence of polyelectrolyte nature</b> Laurent Leclercq - IBMM, University of Montpellier, CNRS, ENSCM, Montpellier, France	9:40-9:55 OP 42
9:55-10:10 OP 41	<b>Chiral separation of cathinones and other novel psychoactive substances by capillary electrophoresis and capillary electrochromatography</b> Martin Schmid - Institute of Pharmaceutical Sciences, Dept. of Pharmaceutical Chemistry, University of Graz, Austria	<b>Development of a lab-on-a-chip for Proteomics</b> Menel Ben Frej - Chimie ParisTech - PSL Research University, Paris France	9:55-10:10 OP 44
10:10-10:25 OP 43	<b>Investigation of Enantioselective Interaction and Determination of Binding Constants of Two Calcium Channel Blockers using Capillary Electrophoresis</b> Rath Rath - Institute of Medicinal and Pharmaceutical Chemistry, TU Braunschweig, Braunschweig, Germany	<b>Development of enzymatic microreactors for analysis of monoclonal antibodies</b> Meriem Dadouch - IBMM, University of Montpellier, CNRS, ENSCM, Montpellier, France	10:10-10:25 OP 46
<b>Coffee break</b>			
11:15	<b>Novelties in electrophoretic devices</b> Chairs: Jesper Østergaard - University of Copenhagen, Denmark Hermann Wätzig - Technical University, Braunschweig, Germany	<b>AFSEP Session (2)</b> Chairs: Agnès Hagège - Institut des Sciences Analytiques, Villeurbanne, France Laurent Leclercq - IBMM, University of Montpellier, France	11:15
11:15-11:45 KN 21	<b>Thiolene-based Microfluidic Devices for Pharmaceutical Applications</b> Jörg Kutter - University of Copenhagen, Denmark	<b>A novel Capillary electrophoresis method to identify and quantify exosomes from bio fluids</b> Marco Mbrani - Institut Galien Paris Sud, UMR 8612, Protein and Nanotechnology in Analytical Science (PNAS), CNRS, Univ. Paris-Sud, Châtenay-Malabry, France	11:15-11:30 OP 48
11:45-12:00 OP 45	<b>A glass-based valve for 2D capillary electrophoresis and on-chip C4D</b> Benjamin Rudisch - Institute for Theoretical and Physical Chemistry, Universität Tübingen, Tübingen, Germany	<b>Assay of Kinases By Capillary Electrophoresis For Classifying Nucleoside-Analogues As Anti-Viral Molecules</b> Ghassan Al Hamoui Dit Banni - Université d'Orléans, CNRS UMR 7311, Institut de Chimie Organique et Analytique (ICOA), Orléans, France	11:30-11:45 OP 50
12:00-12:15 OP 47	<b>Optimization and modeling of matrix-free DNA separation based on electrohydrodynamic actuation in viscoelastic fluids</b> Jeffrey Teillet - Laboratoire d'Analyse et d'Architecture des Systèmes, Toulouse, France	<b>The use of bisphenols chromatographic retentions to describe their biological activities</b> Clémence Gely - UMR 1331 INRA/ENVIT Toxalim, Toulouse, France	11:45-12:00 OP 52
12:15-12:30 OP 49	<b>Separation of long RNAs by capillary electrophoresis for rare disease diagnosis</b> Pierre Emmanuel Gleizes, Centre de Biologie Intégrative, Toulouse, France	<b>Analysis of fatty acids by perfluoro-MEKC</b> Hai Yen Ta - IMRCP, CNRS UMR 5623, University Paul Sabatier, Toulouse, France	12:00-12:15 OP 54
12:30-13:00	<b>Lunch seminar ELECTROPHORESIS (Auditorium Grignard)</b> <b>CA AFSEP Groupe CE (Council room)</b>		12:30-13:00
<b>Poster session</b>			
14:00	<b>CE/MS</b> Chairs: Carolina Simó - Institute of Food Science Research (CIAL), Madrid, Spain, Peter A. Willis - Jet Propulsion Laboratory, California Institute of Technology, Pasadena, USA	<b>Bioanalytical (6)</b> Chairs: Joseph Chamieh - IBMM, University of Montpellier, France, Alberto Escarpa - Universidad de Alcalá, Spain	14:00
14:00-14:25 KN 23	<b>CE-CE-MS: Possibilities and Perspectives</b> Christian Neusüss - Aalen University, Germany	<b>Liquid Extraction Surface Analysis Coupled with Capillary Electrophoresis</b> Doo Soo Chung - Institute Seoul National University - Department of Chemistry - South Korea	14:00-14:25 KN 22
14:25-14:40 OP 51	<b>Single step separation of lanthanides and actinides by CE-ICPMS - A powerful tool for isotope analysis</b> Erwan Dupuis - 1 DEN - Service d'Etudes Analytiques et de Réactivité des Surfaces (SEARS), CEA, Université Paris-Saclay, Gif sur Yvette, France	<b>Electrokinetic Sample Extraction and Enrichment, a Smart Method for the Isolation of Traces of Polar Analytes from Sludge-Type Samples Demonstrated by the Isolation of Microcystins from Lake Sediments</b> Thomas Welsch - Institute of Analytical and Bioanalytical Chemistry, Ulm University, Germany	14:25-14:40 OP 58
14:40-14:55 OP 53	<b>Detection of a reduced monoclonal antibody (mAb) at low ng/ml concentration in biological samples by CE-MS</b> Stephen Lock - Sciex, Warrington, United Kingdom	<b>Size distribution of circulating cell-free DNA in plasma is an individual feature, as revealed by <math>\mu</math>LAS technology</b> Frederic Ginot - Picometrics Technologies, Labège, France	14:40-14:55 OP 60
14:55	<b>CLOSING SESSION</b> Chairs: Hervé Cottet - IBMM, University of Montpellier, France, François Couderc - University Paul Sabatier, Toulouse, France		
14:55-15:40 PL 04	<b>Separating Life from Non-Life on Ocean Worlds</b> Peter A. Willis - Jet Propulsion Laboratory, California Institute of Technology, Pasadena, USA		
15:40-15:55	<b>Awards ceremony</b> Gerard Rozing		
15:55-16:00	<b>ITP 2020</b> David Chen - University of British Columbia, Vancouver, Canada		
<b>Farewell drink</b>			
16:00			16:00