

• **10** L. Picard, G. Gebel, M. Leclère, H. Mendil, **P. Rannou**, "Electrolyte for electrochemical generator". [WO2017050769](#). [FR3041358](#). [EP3353262](#). [US20180261886](#).

e) Synergistic activities:

2018-present	Co-organizer: grE noble eNe rGy conversioN & storagE (ENGINE) international winter school Member of ENGINE2019 & ENGINE2021 & ENGINE 2023 & ENGINE2025 Organizing Committee
2016-2022	Member of the HDR (habilitation) commission of the EDCSV (ED N°254), Graduate School of Chemistry and Life sciences of the University Grenoble Alpes (UGA).
2015-2021	French PI/Assoc. Director of international research for the ANR/NSF "PIRE" project REACT Research and Education in Active Coatings Technologies for the Human Habitat (NSF-OISE PIRE Grant # 1545884 and ANR Grant # ANR-15-PIRE-0001) PI of the French partner (GIANT: 6 labs/18 faculties) for the French National Agency of Research (ANR) Co-Leader of its ACT 3: "Self-assembled Nanomaterials for Energy Generation and Storage"
2013-2021	Co-organizer: on Organic Electronics International Summer School (OESS) Member of OESS (2013/2014/2015/2017/2019/2021) Scientific/Steering Committee Member of the OESS013'Organizing Committee: General co-chair (OESS2014), in charge of selecting/contacting its Invited Lecturers, of its Academic Funding/Support
2013-2022	Co-organizer: International Conference on Organic Electronics (ICOE) Member of ICOE (2014/2015/2016/2017/2018/2019/ ICOE2022) Scientific/Steering Committee Member of the ICOE2013'Organizing Committee: Programme chair (ICOE2013), in charge of selecting/contacting its Invited Lecturers, of its Academic Funding/Support
2012-present	Co-organizer: Minatec Summer Programme (MSP2011-2013) and Grenoble International Internship Programme (2014/2015/2016/2017/2018/2019/2022/2023/ GIIP2024) aiming at International research experience for undergraduate students enrolled in US & Japanese universities. Member of MSP & GIIP scientific/steering committee. Co-organizer: French American Workshop (2012/2013/2014/2015/2016/2017/FAW2018/FAW2019/ FAW2022) @ GIANT
2006-2022	Co-organizer: International Conference on Molecular Electronics (ElecMol). Member of the ElecMol'Organizing Committee (2005-> ElecMol2020): General chair ElecMol10/12, in charge of selecting/contacting its Invited Lecturers, of its Academic Funding/Support
2004-2018	Scientific facilitator (With Dr. J.-L. Fave) of a team of 25 French leading experts of the emerging field of organic (opto)electronics and Senior Expert within the Organic Electronics division of the French Observatory of Micro & NanoTechnologies OMNT -UMS2920

f) Collaborators: : Prof. P.F. Barbara [Univ. of Texas @ Austin (USA)], Prof. Y. Bonnassieux [UMR7647-LPICM (France)], Dr. R. Borsali, [UPR5301-CERMAV (France)], Prof. A. Boucherif [Univ. de Sherbrooke & IRL3463-LN2 (Canada)], Prof. R. Bouchet [UMR5279-LEPMI (France)], Prof. C.J. Brabec [Friedrich-Alexander-Univ. (Germany)], Dr. M. Brinkmann [UPR22-ICS (France)], Dr. M. Burghammer [ESRF-ID13 (France)], Prof. R. Clerc [IOGS (France)], Dr. M.-N. Collomb [UMR5250-DCM (France)], Prof. R.J. Composto [Univ. of Pennsylvania (USA)], Dr. M. Deschamps [Blue Solutions (France)], Dr. G. De Paëpe [CEA-Grenoble/IRIG (France)], Dr. M. Diaz-Lopez [UPR2920-Institut Néel (France)], Dr. B. Donnio [UMR7504-IPCMS (France)], Dr. R. Dreyfus [Univ. de Sherbrooke & IRL3463-LN2 (Canada)], Dr. J. Drnec [ESRF-ID31 (France)], Prof. E. Drockenmüller [UMR5223-IMP (France)], Prof. Z. Fakhraei [Univ. of Pennsylvania (USA)], Prof. C.F.J. Faul [Univ. of Bristol (UK)], Dr. V. Forge [UMR5249-LCBM, (France)], Dr. G. Fragneto [Institut Laue-Langevin (France)], Prof. V.T. Forsyth [Lund Univ. & LINXS-Lund Institute of advanced Neutrons and X-ray Science (Sweden)], Dr. M. Frigoli [UMR-8180-ILV (France)], Dr. D. Gasparutto [UMR5819-SYMMES (France)], Dr. A. Graillet [Specific Polymers (France)], Dr. S. Halila, [UPR5301-CERMAV (France)], Prof. O.T. Ikkala [Aalto Univ. (Finland)], Prof. M. Leclerc [Univ. Laval (Canada)], Dr. M. Lécuyer [Blue Solutions (France)], Dr. C. Loubat [Specific Polymers (France)], Prof. D. Machon [Univ. de Sherbrooke & IRL3463-LN2 (Canada)], Dr. S. Malburet [Specific Polymers (France)], Prof. I. McCulloch [Univ. of Oxford (UK)], Dr. I. Morfin [UMR5588-LiPhy (CNRS/UGA) & ESRF-BM02-D2AM (France)], Prof. C.B. Murray [Univ. of Pennsylvania (USA)], Dr. T. Narayanan [ESRF-ID02 (France)], Prof. P.F. Nealey [Univ. of Chicago (USA)], Dr. F. Ota, [Hitachi Chemical Co., Ltd (Japan)], Prof. A.A.H. Padua [UMR5182-LCH (France)], Prof. H.S. Park [Sungkyunkwan Univ. (South Korea)], Prof. A. Pron [Warsaw Univ. of Technology (Poland)], Prof. S. Sanaur [ENS Mines de Saint-Etienne/CMP (France)], Dr. H. Uehara [Hitachi Chemical Co., Ltd (Japan)], Dr. M. Vilkmann [VTT Technical Research Center of Finland (Finland)], Prof. C.G. Willson [Univ. of Texas @ Austin (USA)], Prof. K.I. Winey [Univ. of Pennsylvania (USA)], Prof. G.-R. Yi [POSTECH (South Korea)], Dr. A. Yassar [UMR7647-LPICM (France)], Prof. P.J. Yoo [Sungkyunkwan Univ. (South Korea)]

g) Graduate & Postdoctoral Advisors:

Dr. M. Nechstchein, Retired, formerly DR1/Directeur de Recherche 1^{ère} Classe CNRS: Thesis Advisor
Dr. T. Saitoh, Retired, formerly Director of the New Materials Laboratory R&D Center, Hitachi Chemical. Co. Ltd, Japan: Postdoctoral Advisor

h) Thesis Advisor, Date [affiliations] (10 total): Bruno Dufour, 10/02 [*Hutchinson (France)*], Jean-Pierre Bonnet, 10/03 [*UMR7314-LRCS (France)*], Sirine Layouni, 07/18 [*Zaion (France)*], Sandrine Martins, 02/05 [*France*], Anaëlle Rongier, 02/18 [*STmicroelectronics (France)*], Sun-Jae Lee, 07/18 [*Soitec (France)*], Philip Overton, 03/19 [*Ballard Power Systems (Canada)*], T.F. Clement, 03/21 [*Verkor (France)*], J. Hurtaud, 06/22 [*IIT-Genoa (Italy)*], Y. Nait Abdi 12/22 [*France*]

i) Postdoctoral Associates [affiliations] (17 total): E.C. Castillon Gonzales (*Spain*), J. Champavert [UMR5249-LCBM (France)], C. Fernandez de Alba Encinas [ICL-INSa Lyon (France)], A. Kyndiah [IIT (Italy)], O. Jaudoin [Gerflor (France)], L. Goujon [Aplix (France)], A. Iwan [General Tadeusz Kosciuszko Military Univ of Land Forces (Poland)], G. Jo [KISTEP (South Korea)], J. Majoinen [VTT (Finland)], F. Mathevet [UMR8323-IPCM (France)], Harpalsinh H. Rana [LionVolt (*The Netherlands*)], M. Mohankumar Sreelatha [Department of Chemistry, Bar-Ilan Univ. (Israel)], F. Oswald [CEA-Saclay (France)], François Pourtier [UPR5301-CERMAV (France)], Amrit Puzari [GIMT/Guwahati University & NIT Nagaland (India)], G. Sych [Edwards Vacuum (France)], and S. Zaioncz (*Brazil*)

j) Present Group:

PhDs (3): H. Pung [24]. L. Polimont [26]. B. Deniger [26].

k) Total Advisees Since 1999: Undergraduates: 19. M.Sc. Students: 16. PhD Students: 13. Postdoctoral Fellows: 17

l) Research Areas

- Circular chemistry towards functional (Multi-Block) Molecules, Macromolecules, Supramolecules, Supramacromolecules & Polymer Networks
- Self-Organized/Healable (Bio-sourced/inspired/mimetic) π -Conjugated (Semi)Conducting & Ionically Conducting Materials
- Energy Conversion (PEMFCs), Harvesting (TEGs/TECs/Hydrovoltaics), and Storage (Batteries & Supercaps)
- Organic/Plastic & (Supra)Molecular (Opto)Electronics, Nanoionics/Nanofluidics, Iontronics
- Multi-Scale/Physics Structure/(Electronic/Ionic/Protonic) Transport Correlations through *ex situ* & *operando* (lab & large-scale facility-based) advanced characterizations & using devices as platforms to enable efficient feedback loops for (functional) materials design

m) Research Interests & Keywords

-Organic & (Supra/Macro)Molecular Chemistry: (Macro/Supra)Molecular Engineering Approaches & Synthetic Routes towards Oligomer, Homopolymer, Alternated/Precise Copolymer, Multi-block Molecules/Copolymer & Dendritic Functional Architectures
 -1D vs. 2D vs. 3D Self-Assembly of Functional Materials: Controlled Phase Segregation (Self-organization & Hierarchization) in (Multiblock) Functional Architectures based on Covalent & Non-Covalent (Ionic, H-Bonding, van der Waals..) Interactions
 - π -Conjugated Materials: Organic Semiconductors (thiophene-based OSCs) & Organic Conductors (aniline-based OCs)
 -Organic Single Crystals & Liquid Crystals (LCs): Molecular OSCs, Calamitic/Sanidic/Polycatenar Functional LC OSCs
 -Bio-sourced/inspired/mimetic OSCs: DNA-OSC Hybrids, Self-Assembled Oligo(Peptide)s (Quantum Dots (QDs) & Nanotubes (NTs)), Proteins, (non-pathogenic) Amyloid fibers
 -Ion & Single-Ion Conducting Materials: Homo/Block Co-polymers, Dynamic Covalent Networks & Thermotropic Ionic LCs (TILCs)
 -Organic Mixed Ionic-Electronic Conductors (OMIECs): (Macro)Molecular & Hybrid (Organic/Inorganic) MIECs
 -Ionic/Electronic Transport & Optoelectronic Properties: dc-Conductivity, Charge Carrier Mobility (SCLC/OFET), Electrochemical Impedance Spectroscopy (EIS), Electronic & Energy & Ionic Transfers
 -Optoelectronic, Iontronic and Energy Devices: Organic Field-Effect Transistors (OFETs), Organic Solar Cells (Donor/Acceptor Heterojunctions), Organic Electrochemical Transistors (OECTs), Solid-State (Gen. 4a/4b/4c) Batteries, Supercapacitors, PEMFCs

n) Recent/On Going National & International Funded Projects (Research Grants)

*French National Public/Private Joint Research Lab. on Electrochemical Energy Storage

•2022-2027: Li^2 $\Rightarrow$ UMR5279-LEPMI/Blue Solutions (BS) Lithium & interface Lab.: Gen. 4B Lithium Metal Batteries
 PI/Head of Li^2 : Prof. R. Bouchet (Grenoble-INP). Co-PI/Steering Committee Member: Dr. P. Rannou (CNRS)



*French National Centre of Scientific Research (CNRS): CNRS-PEPS-ENERGIE2024

•2024-2025: NEXGENELECTROLYTES $\Rightarrow$ Engineering the Next Generation of solid-state Electrolytes by reactive cold sintering
 PI: Dr. M. Diaz-Lopez (CNRS). Co-PI: Dr. P. Rannou (CNRS)

*French National Agency of Research (ANR)

•2016-2022: GATE $\Rightarrow$ Generic Approach To new organic semiconductors for Electronic applications

PI: Dr. M. Frigoli (CNRS). Co-PIs: Dr. P. Rannou (CNRS) & Dr. A. Yassar (CNRS)

•2017-2021: BioNics $\Rightarrow$ self-assembling proteins for Bio-Inspired Nano-electronics

PI: Dr. V. Forge (CEA). Co-PIs: Dr. P. Rannou (CNRS) & Dr. M. Holzinger (DCM) & Dr. A. Thuair (LETI)

•2020-2025: MASTERMIND $\Rightarrow$ MultiscAle Structure/propERty relationship in Mixed (ionic/electronic) (macro)molecular coNDuctors: Towards new generation organic bioelectronics devices

PI: Dr. S. Sanaur (ENSMSE-CMP). Co-PIs: Dr. P. Rannou (CNRS), Dr. Y. Bonnassieux (X-Ecole Polytechnique)

•2021-2025: SWEET-DISPLAY $\Rightarrow$ A convenient approach to glycoamphiphiles as active layers of LCD-based biosensors

PI: Dr. S. Halila (CNRS). Co-PI: Dr. P. Rannou (CNRS)

*Horizon Europe & Horizon 2020 Framework Programs of the European Community (H2020/Horizon Europe)

•2022-2024: HOPES (H2020-MSCA-IF-2020)

$\Rightarrow$ self-assembled/healable Hybrid inorganic/Organic Polymer Electrolytes for sustainable electrochemical energy Storage

PI: Dr. P. Rannou (CNRS). MSCA Fellow: Dr. H.H. Rana. Industrial Secondment @ Specific Polymers

•2020-2024: HIDDEN (LC-BAT-14-2020), 1 of the 6 projects of the H2020-FET-Flagship large-scale initiative Battery2030*

$\Rightarrow$ HInDering DENdrite growth in lithium metal batteries (HIDDEN)

PI Dr. M. Vilkmann (VTT). Co-PI of HIDDEN/PI of the CNRS+UGA partner: Dr. P. Rannou (CNRS).

•2022-2026: SOLID (HORIZON-CL5-2021-D2-01-05), Manufacturing technology development for SSBs (Gen.4a-4b batteries)

$\Rightarrow$ Sustainable manufacturing & Optimized materials & interfaces for Lithium metal batteries with Digital quality control. (SOLID)

PI/ Dr. M. Vilkmann (VTT). Co-PI of Solid/Co-PIs of the CNRS+UGA partner: Dr. M. Marechal (CNRS)+Dr. P. Rannou (CNRS)

*ANR/NSF (France + USA): bilateral collaboration (NSF-PIRE)

•2016-2021: REACT $\Rightarrow$ Research and Education in Active Coatings Technologies for human habitat

French PI: Dr. P. Rannou (CNRS) US PI: Pr. R.J. COMPOSTO (Univ. of Pennsylvania)

*PHC STAR (France + South Korea): bilateral collaboration (PHC STAR)

•2019-2022: PIONEER $\Rightarrow$ Korea-France collaborative research cluster for Post-lithium-ION solid-state Electrochemical enERgy storage devices.

French PI: Dr. P. Rannou (CNRS). South Korean PI: Dr. P.J. Yoo (SKKU).

*FACCTS (France + USA): bilateral collaboration (French Chicago Center (FCC), Embassy of France (USA) & U. Chicago (USA))

•2020-2024: ILLINOIS (FACCTS 2020) $\Rightarrow$ "Thermotropic Ionic Liquid crystal: Encoding dimensionality-controlled & NanocOnfined Ionic tranSPort". French PI: Dr. Patrice Rannou (CNRS). US PI: Pr. P.F. Nealey (U. Chicago)

o) 12 Other Significant Products

•1: "Controlling the nematic liquid crystallinity of cellulose nanocrystals with an alcohol ethoxy sulfonate surfactant", *Biomacromolecules* (2024).

DOI: [10.1021/acs.biomac.3c01375](https://doi.org/10.1021/acs.biomac.3c01375)

•2: "Heating-induced switching to hierarchical liquid crystallinity combining colloidal and molecular order in zwitterionic molecules", *ACS Omega* **8**(42), 39345-39353 (2023). DOI: [10.1021/acsomega.3c04914](https://doi.org/10.1021/acsomega.3c04914)

•3: "Impact of charge carrier injection/extraction performances in low-dimension PEDOT:PSS organic electrochemical transistors", *Adv. Electron. Mater.* **9**(1), 2023, 2201067. DOI: [10.1002/aelm.202201067](https://doi.org/10.1002/aelm.202201067)

•4: "UV-Vis-NIR optical properties of amyloid fibrils as a new light on amyloidogenesis", *Nat. Photon.* **13**(7), 2019, pp 473-479. DOI: [10.1038/s41566-019-0422-6](https://doi.org/10.1038/s41566-019-0422-6)

•5: "Dynamic self-assembly of DNA minor groove-binding ligand DB921 into nanotubes triggered by an alkali halide", *Nanoscale* **10**(12), 2018, pp 5550-5508. DOI: [10.1039/c7nr03875e](https://doi.org/10.1039/c7nr03875e)

•6: "A synthetic redox biofilm made from metalloprotein-prion domain chimera nanowires", *Nat. Chem.* **9**(2), 2017, pp 157-163. DOI: [10.1038/nchem.2616](https://doi.org/10.1038/nchem.2616)

•7: "Improvement of the Seebeck coefficient of PEDOT:PSS by chemical reduction and method for its transfer using free-standing thin films", *J. Mater. Chem. C* **2**(7), 2014, pp 1278-1283. DOI: [10.1039/C3TC31674B](https://doi.org/10.1039/C3TC31674B)

•8: "From block copolymer self-assembly, liquid crystallinity, and supramolecular concepts to functionalities", *Handbook of Liquid Crystals*, 2nd edition, Eds. J.W. Goodby, P.J. Collings, T. Kato, C. Tschierske, H. Gleeson, P. Raines, ISBN-13: 978-3-527-32773-7, Wiley-VCH, Weinheim, Germany, Vol.7: Supramolecular & Polymer Liquid Crystals, 2014, pp 541-598. DOI: [10.1002/9783527671403.hlc122](https://doi.org/10.1002/9783527671403.hlc122)

•9: "The Influence of polymer purification on photovoltaic device performance of a series of indacenodithiophene donor polymers", *Adv. Mater.* **25**(14), 2013, 2029-2034. DOI: [10.1002/adma.201300027](https://doi.org/10.1002/adma.201300027)

•10: "Delineating poly(aniline) redox chemistry using tailored oligo(aryleneamine)s: Towards oligo(aniline)-based organic semiconductors with tunable optoelectronic properties", *Chem. Eur. J.* **17**(44), 2011, pp 12512-12521. DOI: [10.1002/chem.201101697](https://doi.org/10.1002/chem.201101697)

•11: "Self-assembly and hierarchies in pyridine-containing, homopolymers and block copolymers with hydrogen-bonded cholesteric side-chains", *Macromolecules* **43**(3), 2010, 1507-1514. DOI: [10.1021/ma9021604](https://doi.org/10.1021/ma9021604)

•12: "Processible conjugated polymers: From organic semiconductors to organic metals and superconductors", *Prog. Polym. Sci.* **27**(1), 2002, pp 135-190. DOI: [10.1016/S0079-6700\(01\)00043-0](https://doi.org/10.1016/S0079-6700(01)00043-0). Invited Review