Patrice Rannou

CNRS's Director of Research (DR-CNRS)

UMR5279-LEPMI (CNRS/Grenoble-INP/UGA/USMB)

Laboratory of Electrochemistry and Physical-chemistry of Materials & Interfaces

1130, Rue de la Piscine, BP 75, F-38402 SAINT-MARTIN-d'HERES Cedex (France)

Office Phone: +33-(0)4-7682-6685. Cell Phone: +33-(0)6-6010-2962.

Email1: patrice.rannou@cnrs.fr Email2: patrice.rannou@grenoble-inp.fr Webpage: Patrice.Rannou@LEPMI

ORCID: 0000-0001-9376-7136. Web of Science: 1110819. Google Scholar. QOB6L4AAAAJ. Researchgate: Patrice_Rannou.

a) Professional Preparation:

Institut Textile & Chimique de Lyon (ITECH)	Macromolecular Chemistry	M.Sc. 1993
Ecole Nationale Supérieure de Chimie de Montpellier (ENSCM)	Polymer Science	M.Sc. 1994
University Montpellier II (UMII)	Polymer Physics	M.Sc. 1994
University Joseph FOURIER-Grenoble I (UJF)	Physics	Ph.D. 1998
University of Grenoble (UG)	Chemistry Research Habilitation	HDR 2013

b) Appointments:

Since 11/22	**Co-PI/Member of the Steering Committee** of **LEPMI/Blue Solutions'** joint research lab Li² on energy storage
10/99-present	**CR2** (10/99⇨10/02) Chargé de Recherche 2ème classe CNRS (*CR2 is eq. to a position of Assistant Professor*), then **CR1** (10/02⇨03/15) Chargé de Recherche 1ère classe CNRS (*CR1 is eq. to a position of Associate Professor*), and currently **DR2** (10/15⇨present) Directeur de Recherche 2ème classe CNRS (*DR2 is eq. to a position of Full Professor*) at CNRS Chemistry. Section 13. Laboratory: **UMR5279-LEPMI** (CNRS/Grenoble-INP/UGA/USMB)
09/13-12/17	**Deputy Head** (09/13⇨09/17) & **Director** (09/17⇨01/18) of the Observatory of Micro and NanoTechnologies UMS2920-OMNT (CEA/CNRS): A joint CEA+CNRS service unit performing strategic watches and establishing scientific strategies for CEA & CNRS into the fields of Micro/Nano-Technologies
06/98-09/99	**Visiting Researcher**, New Materials Lab. R&D Center, Hitachi Chemical. Co. Ltd, Japan

c) Short Biosketch: Dr. Patrice Rannou (ORC**ID:** 0000-0001-9376-7136) graduated from the Textile & Chemical Institute of Lyon (1993/M.Sc. in Polymer Chemistry), from University Montpellier II (1994/M.Sc. in Polymer Physics), and E.N.S. de Chimie de Montpellier (1994/M.Sc. in Polymer Science). He holds a PhD in Physics from the University J. Fourier (1998) and a research habilitation (HDR) in Chemistry (2013) from the University of Grenoble. After 16 months spent as a visiting researcher at the R & D New Materials Center of Hitachi Chemical Co. Ltd (HCC) in Hitachi-city, Japan, he was hired in Oct. 1999 as a CNRS researcher in the UMR5819-**SyMMES** (**M**olecular **Sy**stems & nano**M**aterial**S** for **E**nergy & health) lab where he served till Sept. 30, 2021. Since Oct. 2021, Nov. 2022, Sept. 2026 he is serving as a CNRS member of the **MIEL** Team (**M**aterials, **I**nterfaces and **EL**ectrochemistry) of the UMR5279-**LEPMI** (**L**aboratory of **E**lectrochemistry and **P**hysicochemistry of **M**aterials & **I**nterfaces) lab, acting as the co-PI & CNRS research member of the LEPMI/Blue Solutions (BS) joint Laboratory Li² (**Li**thium & **i**nterface Lab.), and head of the **MIEL** Team, respectively. He holds a CNRS Director of Research position within the **Section 13** (Soft matter chemistry and physical chemistry) of **CNRS Chemistry** (CNRS's National Institute of Chemistry) since Oct. 2015. Till date (*i.e.* Sept. 2026), he has (co)advised **19** postdoctoral fellows, (co)supervised **13** PhD students (UGA) and co-supervised **10** Foreign PhD students (Penn (USA) and POSTECH & SKKU (South Korea)), and **>35** (under)graduate students. He is the (co)authors of **141** papers (**84** regular articles and **57** proceeding papers), **2** book chapters, and **17** (FR/CA/EP/JP/US/CN/KR/WO) patents.

d) Research Overview: *In a nutshell, multi-scale structures/property (electronic/ionic/protonic transfers) correlations within self-assembled and hierarchized synthetic and bio-based/mimetic/inspired functional (liquid crystalline: LC) materials*. Through the rational design, circular chemistry, controlled synthesis, and advanced processing of functional soft materials aiming at encoding complex and efficient functions through hierarchical self-assembly processes across (nano⇒macro) length scales, his research activities deal with boosting efficiencies of electronic, ionic, and protonic transfers at work within active layers of (opto)electronic active devices (ICTs: Organic (Bio)electronics), of proton exchange membranes of fuel cells (Energy conversion), of thermoelectric devices (Thermoelectric generators and coolers (TEGs vs. TECs)) and of solid-state electrolytes of (μ)batteries & (μ)supercapacitors (Energy storage). I combine these (bio)materials science approaches with the developments of (lab & large-scale facility-based) multimodal platforms allowing in depth (*ex/in situ* and *operando*) studies to access (defect-free) intrinsic and ultimate electronic, ionic and protonic transfer performances of functional soft materials towards next generation applications within the fields of ICTs (Nano/Bioelectronics) and Energy conversion, harvesting (Hydrovoltaic energy) & storage (Nanonionics/Nanofluidics).

e) Products: 141 publications (**84** regular articles & **57** proceeding papers), **2 book chapters** & **17** (FR/EP/JP/US/CN/KR/WO) **patents. Number of times cited** & **h index** [source: google scholar]> **6.3k** & **38**

f) 12 Products closely related to Energy Conversion[3,5-6,9,11]/Storage[1-5,7-10,12] Endeavors addressing UN SDG 7

•**1:** H.J. Song, J.Y. Kim, S. Hong, Y.H. Kim, M.G. Nam, J-W. Ho, M.G. Kang, H.S. Kim, C. Ha, S.U. Lee, P.J. Yoo, **P. Rannou**, "Tailored stereo-configuration of crosslinkable polyester-based solid polymer electrolytes for all-solid-state and binder-free Li metal batteries" *Adv. Sci.* **13**, 2026, e00063. **DOI**: 10.1002/advs.202600063

•**2:** H. Pung, C.Y. Okada-Junior, M. Simões Santos, M. Mirolo, I. Morfin, G. Chahine, J. Duchet-Rumeau, J. Jacquemin, A. Padua, S. Livi, **P. Rannou**, M. Maréchal, "Dynamic mosaicity modulates ion transport in stimuli-responsive liquid crystal electrolytes" *Adv. Sci.* **12(41)**, 2025, e10610. **DOI**: 10.1002/advs.202510610

•**3:** L. Gustavsson, Z-P. Lv, T. Cherian, W. Seppälä, V. Liljeström, B. Peng, S. Huotari, **P. Rannou**, O. Ikkala, "Heating-induced switching to hierarchical liquid crystallinity combining colloidal and molecular order in zwitterionic molecules", *ACS Omega* **8(42)**, 2023, pp 39345-39353. **DOI**: 10.1021/acsomega.3c04914

•**4** J. Majoinen, C. Bouilhac, **P. Rannou**, R. Borsali, "Unidirectional perpendicularly aligned lamella-structured oligosaccharide (A) ABA triblock elastomer (B) thin films utilizing triazolium+/TFSI- ionic nanochannels", *ACS Macro Lett.* **11(1)**, 2022, pp 140-148. **DOI**: 10.1021/acsmacrolett.1c00712

•**5** D. Bresser, M. Leclère, L. Bernard, **P. Rannou**, H. Mendil-Jakani, G-T. Kim, T. Zinkevich, S. Indris, G. Gebel, S. Lyonnard, L. Picard, "Organic liquid crystals as single-ion Li^+ conductors", *ChemSusChem.* **14(2)**, 2021, pp 651-6661. **DOI**: 10.1002/cssc.202001995. **Cover picture**

•**6** A. Le Goff, Y. Nedellec, M. Holzinger, **P. Rannou**, V. Forge, "Ion exchange membrane". WO/2021/018983. FR3099648. EP4005000. US20220263109. CN114175326. KR1020220041138. JP2022542957

•**7** L. Picard, T.F. Clement, **P. Rannou**, "Solid polymer electrolyte made of comb polymer". EP3865533. FR3107276. US20210296699. CN113270638

•**8** T.F. Clement, L. Picard, **P. Rannou**, "Method for fluorinated polymer preparation by Ziegler Natta catalysis". EP3763748. FR3097548.

•**9** T. Cherian, D. Rosa Nunes, T.G. Dane, J. Jacquemin, U. Vainio, T. Myllymäki, J. Timonen, N. Houbenov, M. Maréchal, **P. Rannou**, O. Ikkala, "Supramolecular self-assembly of ultraconfined ionic liquids for fast anisotropic ion transport", *Adv. Funct. Mater.* **29(49)**, 2019, 1905054 (8 pages). **DOI**: 10.1002/adfm.201905054

•**10** P. Overton, L. Picard, **P. Rannou**, "Sulfonamide macromolecules useful as single-ion conducting polymer electrolyte", WO/2019/008061. FR3068693. EP3649107. US20200165197

•**11** E.B. Trigg, T.W. Gaines, M. Maréchal, D.E. Moed, **P. Rannou**, K.B. Wagener, M.J. Stevens, K.I. Winey, "Self-assembled highly ordered acid layers in precisely sulfonated polyethylene produce efficient proton transport", *Nat. Mater.* **17(8)**, 2018, pp 725-731. **DOI**: 10.1038/s41563-018-0097-2

•**12** L. Picard, G. Gebel, M. Leclère, H. Mendil, **P. Rannou**, "Electrolyte for electrochemical generator". WO2017050769. FR3041358. EP3353262. US20180261886.

g) Synergistic activities:

•**2026-To Date**: Acting as one of the members of the **Strategic Committee of the UGA Energy Cluster** & advising the UGA president
•**2026-To Date**: Acting as one of the members of the **BTAP** (**B**eam **T**ime **A**llocation **P**anel) for the CE08 (ID02, ID13, (CRG) BM26) @ ESRF
•**2024-To Date**: Acting as one of the two nominated experts for CNRS-DRE within the **W**orking **G**roups **WG1** (*New & Emerging Technologies*) & **WG3** (*Advanced Materials*) of the (Horizon Europe) BATT4EU/BEPA (**B**atteries **E**uropean **P**artnership/**B**atteries **E**uropean **P**artnership **A**ssociation) strategic partnership: *Meetings & discussions and drafting of **S**trategic **R**esearch and **I**nnovation **A**genda (SRIA), Batteries Europe R&I Roadmap et **W**ork **P**rogramme**s** (**WPs 2025-2026-2027**) of Horizon Europe (9th Framework Programme of The European Community)*
•**2018-To Date**: Co-organizer of the 1st/2nd/3rd/4th edition of the Gr**E**noble e**N**er**G**y Convers**I**o**N** & storag**E** Winter School (ENGINE2019/2021/2023/2025) **ENGINE2025** https://engine2025.sciencesconf.org : *Member of ENGINE's Organizing Committee*
•**2015**: Co-organizer of the 17th Edition of the **F**rench **W**orkshop of **S**elf-**O**rganized **A**nisotropic **S**ystems (**CFCL2015**) CFCL2015: https://new.societechimiquedefrance.fr/Events/cfcl-2015/: *Member of the CFCL2015's Organizing Committee*
•**2014**: Co-organizer of the 2nd **O**rganic **E**lectronics **S**ummer **S**chool (**OESS2014**) **OESS2014**: http://www.ooe.sfoptique.org: *Member of the OESS's Steering Committee and Program Co-Chair (with Prof. Raphaël CLERC)*
•**2013-To Date**: *Member of the **ICOE**'s International Advisory Committee*. ICOE2025: https://icoe2025.co.it.pt/committees/
•**2013-To Date**: Co-organizer of the **F**rench-**A**merican **W**orkshop (FAW) **FAW2022**: https://www.internships.giant-grenoble.org/about-the-giip/french-american-workhsop/: *Member of the Organizing Committee of FAW.*
•2013: Co-organizer of the 9th **I**nternational **C**onference on **O**rganic **E**lectronics (**ICOE**) **ICOE2013**: http://www.icoe2013.org: Member of the ICOE2013's Organizing Committee and Program Co-Chair (with Prof. Raphaël CLERC)
•**2012-To Date**: *Member of the Steering Committee of the **M**INATEC **S**ummer **P**rogram (**MSP**) and **G**iant **I**nternational **I**nternship **P**rograme (**GIIP**)* **GIIP**: http://www.internships.giant-grenoble.org/
•**2012 till 2014**: *Responsible of communication (CNRS-INP/INC sides) of the UMR5819-SPrAM (CNRS/CEA/UJF) Lab*
•**2012**: Co-organizer of the 41st **N**ational **C**ongress of the **F**rench **A**ssociation of **P**olymers (**GFP**) GFP2012: http://gfp2012.cermav.cnrs.fr: *Member of the GFP2012's Organizing Committee*
•**2006-To Date**: Co-organizer of the International Conference on Molecular Electronics (ElecMol) **ElecMol26**: https://elecmol26.sciencesconf.org/: *Member of ElecMol's Organizing Committee (Till 2018) and Member of ElecMol's Scientific Committee (Since 2021)*
•**2004 till 2017**: Co-leader (With Dr. Jean-Louis FAVE) of a team of ca. 25 French leading experts of the emerging field of organic (opto)electronics and Senior Expert within the Organic Electronics division of the French **O**bservatory of **M**icro & **N**ano**T**echnologies **OMNT-UMS2920** (CNRS/CEA): http://www.omnt.fr/index.php/en/
•**2001-03/2013**: *Elected member of the Scientific Council of the UMR5819-SPrAM* (CNRS/CEA/UJF) Laboratory of Structures and Property of Molecular Architectures

h) Collaborators:

Prof. P.F. Barbara [Univ. of Texas @ Austin (USA)], Dr. Sebastien Boisseu [CEA-Leti (France)], 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. Drockenmuller [UMR5223-IMP (France)], Prof. Z. Fakhraai [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)], Prof. Claudio Gerbaldi [Politecnico di Torino (Italy)], Dr. A. Graillot [Specific Polymers (France)], Dr. S. Halila, [UPR5301-CERMAV (France)], Prof. D.S. Hwang [POSTECH (South Korea)] 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)], Prof. D. Mecerreyes [POLYMAT & UPV/EHU, Basque Country/Spain], 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. Janne Ruokalainen [Aalto Univ. (Finland)], Dr. F. Pignon [UMR5520-LRP (France)], Prof. S. Sanaur [ENS Mines de Saint-Etienne/CMP (France)], Dr. H. Uehara [Hitachi Chemical Co., Ltd (Japan)], Dr. M. Vilkman [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)]

i) Graduate & Postdoctoral Advisors:

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

j) Thesis Advisor (UGA PhDs), Date [*affiliations*] (12 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),* H. Pung 03/24 *(France),* L. Poplimont 05/24 *(France).*

k) Postdoctoral Associates [*affiliations*] (19 total):

E.C. Castillon Gonzales (*Spain*), J. Champavert [*UMR5249-LCBM* (France)], M. Falco [*Game lab, Politecnico Di Torino* (Italy)], C. Fernandez de Alba Encinas [*ICL-INSA Lyon* (France)], A. Kyndiah [*IIT* (Italy)], O. Jaudoin [*Gerflor* (France)], L. Goujon [*Aplix* (France)], M. Guyot (*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*. (Israël)], F. Oswald [*CEA-Saclay* (France)], François Pourtier [*CEA-Leti* (France)], Amrit Puzari [*GIMT/Guwahati University & NIT Nagaland* (India)], G. Sych [*Edwards Vacuum* (France)], and S. Zaioncz (*Brazil*)

l) Present Group:

PDF **(1)**: Gabriele Lingua [**'26**]. PhDs **(2)**: Bertrand Deniger [**'26**] & Liana Revil-Baudard [**'29**].

m) Total Advisees Since 1999:

Undergraduates: **19.** M.Sc. Students: **16.** PhDs (UGA): **13.** Foreign PhDs: **10.** Postdoctoral Fellows: **19**

n) Research Areas

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

o) 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*

-Single-Ion Conducting Materials: *Homo/Block Co-polymers, Dynamic Covalent Adaptable Networks & Thermotropic ionic liquid crystals*
-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) Batteries, Onchip Batteries (μBatteries), Supercaps, AEMFCs/PEMFCs*

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

***French National Public/Private Joint Research Lab. on Electrochemical Energy Storage**
•**2022-2027**: Li²⇨UMR5279-**LEPMI**/Blue Solutions (**BS**) Lithium & interface Lab.: Gen. 4B Lithium Metal Batteries
PI/Head of Li²: Prof. R. Bouchet (Grenoble-INP). **Co-PI/Steering Committee Member**: Dr. **P. Rannou** (CNRS)

French National Centre of Scientific Research (CNRS*): CNRS-PEPS-ENERGIE 2024
•**2024-2025:** NEXGENELECTROLYTES⇨ 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⇨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⇨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. Thuaire (LETI)
•**2020-2025**: MASTERMIND⇨ 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⇨A convenient approach to glycoamphiphiles as active layers of LCD-based biosensors
PI: Dr. S. Halila (CNRS). **Co-PI**: Dr. **P. Rannou** (CNRS)
•**2024-2028**: BioVolt⇨Protein nanofibrils for energy harvesting from ambient humidity
PI: Dr. V. Forge (CEA). **Co-PI**: Dr. **P. Rannou** (CNRS)

***Horizon Europe & Horizon 2020 Framework Programs of the European Community (H2020/Horizon Europe)**
•**2020-2024**: HIDDEN (LC-BAT-14-2020), 1 of the 6 projects of the H2020-FET-Flagship large-scale initiative Battery2030⁺
⇨HInDering DENdrite growth in lithium metal batteries (HIDDEN)
Partners: VTT, CNRS, CSEM, BFH, BELENOS CLEAN POWER HOLDING AG, SECIFIC POLYMERS, RTD TALOS LTD
PI: Dr. M. Vilkman (VTT). **Co-PI of HIDDEN/PI of the CNRS+UGA partner**: Dr. **P. Rannou** (CNRS).
•**2022-2023**: HOPES (H2020-MSCA-IF-2020)
⇨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**
•**2022-2027**: SOLiD (HORIZON-CL5-2021-D2-01-05), Manufacturing technology development for SSBs (Gen.4a-4b batteries)
⇨Sustainable manufacturing & Optimized materials & interfaces for Lithium metal batteries with Digital quality control. (SOLiD)
Partners: PULSEDEON OY, ABEE, RTD TALOS Ltd, AALTO UNIV., CNRS, UGA, SPECIFIC POLYMERS,
OCSIAL EUROPE SARL, ARMOR BATTERY FILMS, COATEMA COATING MACHINERY GMBH,
UNIVERZITA TOMASE BATI VE ZLINE, CENTRO RICERCHE FIAT SCPA, CSEM, BFH
PI/ Dr. M. Vilkman (VTT). **Co-PI of SoliD/Co-PIs of the CNRS+UGA partner**: Dr. M. Marechal (CNRS)+Dr. **P. Rannou** (CNRS)
•**2024-2025**:CLICKBatt (**Unite!** Seed Fund 2024): Seed Fund grant for the writing and submission of Horizon Europe proposals
⇨ CLICK-Chemistry enabled sustainable & safe-by-design (post-LiBs) solid-state Batteries. Partners: CNRS,
POLITECNICO di TORINO (PoliTO: Prof. C. Gerbaldi), AALTO Univ. (Aalto: Prof. J. Ruokolainen), VTT (Dr. M. Vilkman).
PI: Dr. **P. Rannou** (CNRS).
•**2026-2028**:BioCharge (**Unite!** Seed Fund 2026): Seed Fund grant for the writing and submission of Horizon Europe proposals
⇨ Preprogramming Proteins into UV-Curable, Self-Healing Platforms for Sustainable Next-Generation Batteries
Partners: POLITECNICO di TORINO (PoliTO: Prof. C. Noe), KTH Royal Institute of Technology (KTH: Prof. A. Cappezza) & CNRS
PI: Prof. C. Noe (PoliTO). **Co-PI** of the **CNRS partner**: Dr. **P. Rannou** (CNRS)

***ANR/NSF (France + USA): bilateral collaboration (NSF-PIRE)**
•**2016-2021**: REACT⇨ 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⇨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 (FCC, the Embassy of France (USA) & the University of Chicago (U. Chicago))**
•**2020-2024**: ILLINOIS (FACCTS 2020) ⇨"Thermotropic Ionic Liquid crystaL: Encoding dImensionality-controlled
& NanocOnfined Ionic tranSport". **French PI**: Dr. **P. Rannou** (CNRS). **US PI**: Pr. P.F. Nealey (U. Chicago)

***Bando Vinci 2026-Capitolo III (France + Italy): bilateral collaboration (UFI: Université Franco-Italienne)**
•**2026-2029**: ECOBATT ⇨"Electrochemical Energy Storage 2.0: Safer and higher-performance ECO-designed all-solid-state BATTeries
based on stimuli-responsive polymer electrolytes (ECOBATT)". **French PI**: Dr. **P. Rannou** (CNRS). **Italian PI**: Pr. C. Gerbaldi (PoliTO)

q) 11 Other Significant Products

•**1:** "A universal method for achieving ultra-low contact resistances in organic electrochemical transistors" *Adv. Mater. Interfaces* **12**, 2025, e00208. **DOI**: 10.1002/admi.202500208
•**2:** "Controlling the nematic liquid crystallinity of cellulose nanocrystals with an alcohol ethoxy sulfonate surfactant", *Biomacromolecules* **25(7)**, 2024, pp 3909-3919. **DOI**: 10.1021/acs.biomac.3c01375 **Cover picture**
•**3:** "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
•**4:** "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
•**5:** "A synthetic redox biofilm made from metalloprotein-prion domain chimera nanowires", *Nat. Chem.* **9(2)**, 2017, pp 157-163. **DOI**: 10.1038/nchem.2616
•**6:** "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
•**7:** "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. **Invited Handbook Chap.**
•**8:** "The Influence of polymer purification on photovoltaic device performance of a series of indacenodithiophene donor polymers", *Adv. Mater.* **25(14)**, 2013, pp 2029-2034. **DOI:** 10.1002/adma.201300027
•**9:** "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
•**10:** "Self-assembly and hierarchies in pyridine-containing, homopolymers and block copolymers with hydrogen-bonded cholesteric side-chains, *Macromolecules* **43(3)**, 2010, pp 1507-1514. **DOI**: 10.1021/ma9021604
•**11:** "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. **Invited Review**