

Thèmes de recherche

- Synthèse et caractérisation des matériaux polymères photoactifs pour application photovoltaïque.
- Réalisation et tests des cellules solaires photovoltaïques organiques.
- Réplication de Micro/Nano structure en surface d'objets en polymères

Thématiques actuelles

- Cellules photovoltaïques organiques et hybrides
- Micro/nano texturation de surface polymère
- Matériaux pour l'énergie

Publications

- Charvin, N., Resende, J., Papanastasiou, D., Munoz-Rojas, D., Jiménez, C., **Nourdine, A.**, Bellet, D., Flandin, L., "Dynamic degradation of metallic nanowire networks under electrical stress: a comparison between experiments and simulations", *Nanoscale Advances*, RSC, 3, 675-681, RSC, **2021**.
- El-Moussawi, Z., **Nourdine, A.**, Flandin, L., "A Key Progress in Introducing Single Walled Carbon Nanotubes to Photovoltaic Devices", *Applied Nanoscience*, **2020**.
- El Aboudi, I., Mdarhri, A., Lame, O., Brosseau, C., **Nourdine, A.**, Fabrègue, D., Bonnefont, G., "Analyzing the microstructure and mechanical properties of polytetrafluoroethylene fabricated by field-assisted sintering", *Polymer*, 203, 122810, **2020**.
- El Aboudi, I., Mdarhri, A., Brosseau, C., **Nourdine, A.**, Rzaisi, M., Servant, L., "Comparing the sorption kinetics of polytetrafluoroethylene processed either by extrusion or spark plasma sintering", *Polymer*, 190, 122192, **2020**.
- Fredj, D., Alkarsifi, R., Pourcin, F., Liu, X., Chniba-Boudjada, N., Pierron, P., **Nourdine, A.**, Boujelbene, M., Fahlman, M., Vidélot-Ackermann, C., Flandin, L., Ben Dkhil, S., Margeat, O., Ackermann, J., "A new antimony-based organic-inorganic hybrid material as electron extraction layer for efficient and stable polymer solar cells", *ACS Applied Materials & Interfaces*, 11, 44820-44828, **2019**.
- El-Moussawi, Z., **Nourdine, A.**, Medlej, H., Toufaily, J., Hamieh, T., Chenevier, P., Flandin, L., "Fine Tuning of Optoelectronic Properties of Single-Walled Carbon Nanotubes from Conductors to Semiconductors", *Carbon*, 153, 337-346, **2019**.
- Lecarme, L., Consonni, V., Lafolet, F., Cossuet, T., Mermoux, M., Sauvage, F., **Nourdine, A.**, Leprêtre, J. C., "ZnO Nanowires as promotor for High Photo-Induced Efficiency and Voltage Gain for Cathode Battery Recharge", *ACS Applied Energy Materials*, 2, 6254-6262, **2019**.
- Bentoumi, M., Mdarhri, A., Montagne, A., **Nourdine, A.**, El Aboudi, I., Iost, A., "Nano-indentation for probing mechanical

properties of nanocomposites based on ethylene butylacrylate copolymer and carbon black", *Journal of Applied Polymer Science*, 136, 47897, **2019**.

- Elhaouzi, F., **Nourdine, A.**, Brosseau, C., Mdarhri, A., Elaboudi, I., Zaghrioui, M., "Hyperelastic Behavior and Dynamic Mechanical Relaxation in Carbon Black-Polymer Composites", *Polymer Composites*, 40, 3005-3011, **2018**.
- Dubelley, F., **Nourdine, A.**, Giboz, J., Carrier, S., Molmeret, Y., Tanchine, L., Fillon, B., Mélé, P., "New ways to Nanotexture model Polymer Surface", *Proceedings to World Congress on Micro and Nano Manufacturing*, **2018**.
- **Nourdine, A.**, Flandin, L., Albérola, N., Perrin, L., Planes, E., Hiltner, A., Baer, E., "Extrusion of a nano-ordered active layer for organic photovoltaic cells", *Sustainable Energy & Fuels*, 1, 2016-2027, **2017**.
- **Nourdine, A.**, Perrin, L., Carrot, C., Baer, E., Flandin, L., Albérola, N., "Compatibility of C₆₀ grafted polystyrene/P3OT: Towards the extrusion of photoactive materials", *European Polymer Journal*, 96, 1-9, **2017**.
- El-Moussawi, Z., Medlej, H., **Nourdine, A.**, Berson, S., Toufaily, J., Hamieh, T., Flandin, L., "Development of Dithienosilole-pyridalithiadiazole-based Copolymer as an Electron Donor in Organic Photovoltaic Cells", *IEEE Transactions on Nanotechnology*, 16, 4, 574-581, **2017**.
- El-Moussawi, Z., Medlej, H., **Nourdine, A.**, Berson, S., Toufaily, J., Hamieh, T., Flandin, L., "A Near-IR Absorbing Copolymer for Nanoarchitected Solution-Processable Photovoltaic Devices: Synthesis and Application", *Proceeding to 11th IEEE Nanotechnology Materials and Devices Conference NMDC2016*, 1-2, **2016**.
- Medlej, H., **Nourdine, A.**, Awada, H., Abbas, M., Dagrón-Lartigau, C., Wantz, G., Flandin, L., "Fluorinated benzothiadiazole-based low band gap copolymers to enhance open-circuit voltage and efficiency of polymer solar cells", *European Polymer Journal*, 59, 25-35, **2014**.
- **Nourdine, A.**, Perrin, L., Alberola, N., Flandin, L., "Extrusion as plausible processing method for production of organic photovoltaic solar cells Photovoltaic", *proceeding to 40th IEEE Specialist Conference PVSC2014*, 2581-2583, **2014**.
- Medlej, H., **Nourdine, A.**, Awada, H., Abbas, M., Dagrón-Lartigau, C., Wantz, G., Flandin, L., "Synthesis and Photovoltaic Properties of a New Donor-Acceptor Conjugated Polymer Based on Fluorinated Benzothiadiazole Units", *proceeding to 40th IEEE Specialist Conference PVSC2014*, 1766-1769, **2014**.
- Perrin, L., **Nourdine, A.**, Planes, E., Carrot, C., Albérola, N., Flandin, L., "Fullerene-based processable polymers as plausible acceptors in photovoltaic applications", *Journal of Polymer Science Part B: Polymer Physics*, 51, 4, 291-302, **2013**.
- **Nourdine, A.**, Perrin, L., De Bettignies, R., Guillerez, S., Flandin, L., Albérola, N., "Synthesis and characterization of fullerene based systems for photovoltaic applications: Evidence for percolation threshold", *Polymer*, 52, 26, 6066-6073, **2011**.

Communications orales en conférences internationales :

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- Bottiglieri, L., **Nourdine, A.**, Resende, J., Jiménez, C., Deschanvres, J-L., "Optimized stoichiometry for CuCrO₂ thin films as Sustainable and semi-transparent Hole Transparent Layer in performant and recyclable organic solar cells ", **Nano'C, 2021-11-23_25**. Toulouse (Fr).
- Bottiglieri, L., **Nourdine, A.**, Resende, J., Jiménez, C., Deschanvres, J-L., "CuCrO₂ thin films out of stoichiometry as semi-transparent Hole Transparent Layer in performant and recyclable hybrid solar cells ", **Nanotech, 2021-06-23_25**. Paris (Fr).
- Resende, J., Sannicolo, T., Khan, A., Nguyen, V., Papanastasiou, D.T., **Nourdine, A.**, Aghazadehchors, Charvin, N., S., Muñoz-Rojas, D., Jiménez, C., Nguyen, N.D, Flandin, L., Bellet, D., "Transparent Conductive Metal Networks and Oxide Thin Films", **Materials 2019, 2019-04-14_17**, Lisbon (PT).
- **Nourdine, A.**, Flandin, L., Albérola, N., Perrin, L., Planes, E., Hiltner, A., Baer, E., "Extrusion Process for Production of Organic Photovoltaic Cells: proof of concept", **AEMC2019-European Advanced Energy Materials Congress, 2019-03-24_27**. Stockholm (SE).
- Fredj, D., **Nourdine, A.**, Pourcin, F., Ben Dkhil, S., Vernet, J., Cruchon, B., Pierron P., Lionel Flandin, L., "High-Performance inkjet Printed Flexible Organic solar cells and modules Using Silver nanowires as Transparent Electrode", **AOHM-Advances in Organic and Hybrid Electronic Materials, 2019-03-17_20**. Dubrovnik (HRV)
- Resende, J., Sannicolo, T., Khan, A., Charvin, N., **Nourdine, A.**, Papanastasiou, D.T., Nguyen, V., Aghazadehchors, S., Muñoz-Rojas, D., Jiménez, C., Nguyen, N.D, Flandin, L., Bellet, D., "Optimizing the properties of transparent electrodes based on silver nanowire networks for integration into organic solar cells ", **MRS Fall meeting 2018, 2018-11-25_30**. Boston (USA).
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- El-Moussawi, Z., **Nourdine, A.**, Medlej, H., Toufaily, J., Hamieh, T., Chenevier, P., Flandin, L., "Tuning the electrical and optical properties of SWCNT to the solubility limit via reversible superfunctionalization", **KSH Building, CWRU, 2018-10-02**. Cleveland (US).
- Dubelley, E., **Nourdine, A.**, Giboz, J., Carrier, S., Molmeret, Y., Tanchine, L., Fillon, B., Mélé, P., "New ways to Nanotexture model Polymer Surface", **World Congress on Micro and Nano Manufacturing 2018, 2018-09-18_20**. Portoroz (SI).

- El-Moussawi, Z., **Nourdine, A.**, Medlej, H., Toufaily, J., Hamieh, T., Chenevier, P., Flandin L., "SWCNT with tunable electrical and optical properties: from conductor to semiconductor", **AEMC2018-European Advanced Energy Materials Congress, 2018-03-25_28**. Stockholm (SE).
- **Nourdine, A.**, Flandin, L., Albérola, N., Perrin, L., Planes, E., Hiltner, A., Baer, E., "Nano-Extrusion Process for Production of Organic Photovoltaic Cells: Proof of Concept", **PPS33- 33rd Annual Meeting of the Polymer Processing Society, 2017-12-10_14**. Cancun (MX).
- El-Moussawi, Z., Medlej, H., **Nourdine, A.**, Berson, S., Toufaily, J., Hamieh, T., Flandin, L., "Low Band Gap Near-IR Conjugated Copolymer Based on Dithienosilole and Pyridalthiadiazole for enhanced Voc in OPV Cells", **AEM2017-2nd International Conference on Advanced Energy Materials, 2017-09-11_13**. Guildford (GB).
- El-Moussawi, Z., Medlej, H., **Nourdine, A.**, Berson, S., Toufaily, J., Hamieh, T., Flandin, L., "A Near-IR Absorbing Copolymer for Nanoarchitected Solution-Processable Photovoltaic Devices: Synthesis and Application", **NMDC2016-Nanotechnology Materials and Devices Conference, 2016-10-09_12**. Toulouse (FR).
- **Nourdine, A.**, Perrin, L., Flandin, L., Albérola, N. D., "Bulk-heterojunction based on donor and acceptor polymers via extrusion process for photovoltaic application", **EPF2013-European Polymer Congress, 2013-07-17_21**. Pisa (IT).
- Flandin, L., **Nourdine, A.**, Perrin, L., Albérola, N. D., "A step towards extrudable photovoltaic: the synthesis of donor and acceptor polymers", **242nd ACS National Meeting, 2011-08-28_2011-09-01**. Denver, Colorado (USA)
- Perrin, L., **Nourdine, A.**, Planes, E., Flandin, L., Albérola, N. D., "Synthesis and characterization of photoactive and extrudable polymers in view of developing a new solvent-free process for production of organic solar cells", **EPF2011-European Polymer Congress, 2011-06-26_2011-07-01**. Grenada (SP).
- Perrin, L., **Nourdine, A.**, Flandin, L., Albérola, N. D., "Multilayered polymer organization for organic photovoltaic", **IS-FOE10-3rd International Symposium on Flexible Organic Electronics. 2010-07-06_09**. Ouranoupolis (Greece).

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(La présentation a été réalisée par la personne dont le nom est souligné)

- Bottiglieri, L., **Nourdine, A.**, Resende, J., Jiménez, C., Deschanvres, J-L., "CuCrO₂ as promising Hole Transport Layer for Organic solar cell: A study on stoichiometry and reusability ", **Surfaces, Interfaces and Coatings Technologies European Materials Research Society EMRS 2020-2021, 2021-05-31_2021-06-04**. Strasbourg (Fr).
- Dubelley, F., **Nourdine, A.**, Giboz, J., Carrier, S., Molmeret, Y., Tanchine, L., Fillon, B., Mélé, P., "Improving the quality of micro-nanostructures replication on a polymer surface to confer new functional properties", **AEMC2019-European**

Advanced Energy Materials Congress. 2019-03-24_27.
Stockholm (SE).

• El-Moussawi, Z., **Nourine, A.**, Medlej, H., Hamieh, T., Chenevier, P., Flandin, L., "Reversible superfunctionalization process for production of soluble SWCNT with tunable electrical and optical properties", **AEMC2019-European Advanced Energy Materials Congress, 2019-03-24_27.** Stockholm (SE).

• Lecarme, L., Consonni, V., Lajolet, F., **Nourine, A.**, Sauvage, F., Alloin, F., Leprêtre, J. C., "Photo Assisted ITO Systems for Li-ion Batteries". **69th annual meeting of the International Society of Electrochemistry (ISE). 2018-09-02_07.** Bologna (IT).

• **El-Moussawi, Z.**, Medlej, H., **Nourine, A.**, Berson, S., Toufaily, J., Hamieh, T., Flandin, L., "Improvement of open circuit voltage in dithienosilole-pyridalthiadiazole-based organic solar cells", **European Advanced Energy Materials and Technology Congress 2018. 2018-03-25_28,** Stockholm (SE).

• El-Moussawi, Z., Medlej, H., **Nourine, A.**, Berson, S., Toufaily, J., **Hamieh, T.**, Flandin, L., "New Pyridythyadiazole-Based-Donor-Acceptor Copolymer Semiconductors for Efficient Polymer Solar Cells", **9th International Conference on Material Sciences. 2015-08-26_28,** Nancy (FR).

• **Nourine, A.**, Perrin, L., Alberola, N., Flandin, L., "Extrusion as plausible processing method for production of organic photovoltaic solar cells Photovoltaic", **40th IEEE Specialist Conference PVSC2014, 2014-06-08_13.** Denver (USA).

• **Medlej, H.**, **Nourine, A.**, Awada, H., Abbas, M., Dagrón-Lartigau, C., Wantz, G., Flandin, L., "Synthesis and Photovoltaic Properties of a New Donor-Acceptor Conjugated Polymer Based on Fluorinated Benzothiadiazole Units", **40th IEEE Specialist Conference PVSC2014, 2014-06-08_13.** Denver (USA).

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• **Perrin, L.**, **Nourine, A.**, Flandin, L., Alberola, N. D., "Multilayered polymer organization for organic photovoltaic", **3rd International Symposium on Flexible Organic Electronics (IS-FOE10). 2010-07-6_9.** Ouranopolis (Greece).