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Speaker: Prof. Ange Nzihou, IMT Mines Albi - CNRS, France

Title: How metal species influence the production of green hydrogen from biomass and biowastes?

Date & Time: 29th October 2021, from 4:00 - 4:30 PM at SK Future Hall, Korea University



IMT Mines Albi, France

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Website: <http://www.ange-nzihou-research-team.com>

Ange Nzihou is a Distinguished Professor of Chemical and Environmental Engineering at the RAPSODEE Research Center-CNRS, IMT Mines Albi (France). He holds other positions among which, a Fulbright visiting professor at Princeton University (USA), Visiting professor at Zhejiang University (China), University College Dublin (Ireland), and Mahatma Gandhi University (India). He is the Editor-in-Chief of the Journal Waste and Biomass Valorization (Springer Nature) and the Editor of the Handbook on “Characterization of Biomass, Biowaste and related By-products” (Springer Nature). He is also Member of the Advisory Board of the PASET program (Partnership for skills in Applied Sciences, Engineering and Technology) of the World Bank and Expert for the EU Energy and Environment framework programs.

His main research fields and expertise are energy and added-value materials from biomass and waste; bioresources to biochar, graphitic materials and graphene; hydrogen and syngas production from bioresources; elaboration, functionalization of carbon and phosphate-based composites / hybrid materials (sorbents, catalysts, energy carriers, sensors) for energy and depollution; thermochemical processes (pyrolysis, gasification, reforming); Behavior of pollutants such as heavy metals and aerosols (fine particles). He has published about 190 papers in international peer reviewed journals, 5 world patents (2 scaled-up in industry), edited 1 reference book (Handbook), co-edited 3 books and co-authored 12 book chapters, chaired and co-chaired 10 international conferences, 2 international summer schools. He has delivered 45 plenary and invited keynote lectures in international conferences. He is currently PI of 2 research chairs (joint Laboratories) with international industrial companies.

He has received international and national scientific recognitions and awards such as the Fulbright scholarship for scientific excellence (Princeton University, USA) in 2020, the Grand Prix of the Academy of Sciences of France in 2018, and the insignia of Knight of the National Order of Merit (France) by the President of France in 2017 for his scientific accomplishment.

Dong, J., Jeswanic, H. K., Nzihou, A., Azapagic, A. The environmental cost of recovering energy from municipal solid waste. *Applied Energy* 267, 114792, 2020 (DOI: 10.1016/j.apenergy.2020.114792).

Nzihou, A., Stanmore, B., Lyczko, N., Pham Minh, D. The Catalytic Effect of Inherent and Adsorbed Metals on the Fast/Flash Pyrolysis of Biomass: A Review. *Energy* 170, 326-337, 2019 (DOI: 10.1016/j.energy.2018.12.174).

Son Phan, T., Sane, A. R., Rêgo de Vasconcelos, B., Pham Minh, D., Sharrock, P., Grouset, D., Nzihou, A. Hydroxyapatite supported bimetallic cobalt and nickel catalysts for syngas production from dry reforming of methane. *Applied Catalysis B: Environmental* 224, 310-321, 2018 (DOI: 10.1016/j.apcatb.2017.10.063).

Hervy, M., Pham Minh, D., Gerente, C., Weiss, E., Nzihou, A., Villot, A., Le Coq, L. H₂S removal from syngas using wastes pyrolysis chars. *Chemical Engineering Journal* 334, 2179-2189, 2018 (DOI: 10.1016/j.cej.2017.11.162).

Zeng, K., Pham Minh, D., Gauthier, D., Weiss-Hortala, E., Nzihou, A., Flamant, G. The effect of temperature and heating rate on char properties obtained from solar pyrolysis of beech wood. *Bioresource Technology* 182, 114-119, 2015 (DOI:10.1016/j.biortech.2015.01.112).

Contact: Prof. Yong Sik Ok, Director, APRU SWM Program (yongsikok@korea.ac.kr)

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Speaker: Prof. Clara Santato, Polytechnique Montréal, Montreal, Canada

Title: En route towards sustainable organic electronics

Date & Time: 29th October 2021, from 4:30 - 5:00 PM at SK Future Hall, Korea University



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<https://www.polymtl.ca/create-seed/en>

Clara Santato (PhD, Geneva U, 2001), *Canada Research Chair in Sustainable Organic Electronics: Materials, Processes Devices*, is Professor in the Department of Engineering Physics at Polytechnique Montreal.

Dr Santato's key achievements include: seminal work on WO₃-catalysed water photoelectrolysis for hydrogen (H₂) production; groundbreaking work on organic (carbon-based) electronics, specifically on Organic Thin Film Transistors. She has conducted and led research projects in both European and North American institutions (including Purdue U and Cornell U). For her research on solar energy conversion and light-emitting devices, she has been elevated, in 2016, to the Institute of Electrical and Electronics Engineers (IEEE) Senior membership.

She demonstrated the first melanin biopigment-based supercapacitor. For this work, she was awarded the 2018 Materials Research Society (MRS) Communications Lecture Award.

Clara serves as Editor of the Journal of Power Sources and member of the Advisory Board of the Journal of Materials Chemistry C and Materials Advances (Royal Society of Chemistry) as well as NanoExpress (Institute of Physics).

Clara is the PI of a Canada-wide Collaborative Research and Training Experience in Sustainable Electronics and Eco-Design (CREATE SEED, 2020-2027) initiative, funded by NSERC, bringing together some 20 universities and industrial partners in Canada and abroad.

Di Mauro, E., Rho, D. & Santato, C. Biodegradation of bio-sourced and synthetic organic electronic materials towards green organic electronics. *Nat Commun* 12, 3167 (2021). <https://doi.org/10.1038/s41467-021-23227-4>

Realì, M., Camus, A., Beaulieu, G., De Angelis, J., Pellerin, C., Pezzella, A. & Santato, C. (2021). Eumelanin: From Molecular State to Film. *Journal of Physical Chemistry C*, 125(6), 3567-3576. <https://doi.org/10.1021/acs.jpcc.0c10063>

Lemieux, J., Belanger, D. & Santato, C. (2021). Toward Biosourced Materials for Electrochemical Energy Storage: The Case of Tannins. *ACS Sustainable Chemistry & Engineering*, 9(17), 6079-6086. <https://doi.org/10.1021/acssuschemeng.1c01535>

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S. Barbosa, M., Balke, N., Tsai, W.-Y., Santato, C. & Orlandi, M.O. (2020). Structure of the Electrical Double Layer at the Interface between an Ionic Liquid and Tungsten Oxide in Ion-Gated Transistors. *Journal of Physical Chemistry Letters*, 11(9), 3257-3262. <https://doi.org/10.1021/acs.jpclett.0c00651>

Zvezdin, A., Di Mauro, E., Rho, D., Santato, C. & Khalil, M. (2020). En route toward sustainable organic electronics. *MRS Energy and Sustainability* - 7, 8 pages. <https://doi.org/10.1557/mre.2020.16>

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Speaker: Prof. Amar K. Mohanty, University of Guelph, Canada

Title: Can Biodegradable Plastics Alleviate Single-use Plastic Waste? New Challenges in the Changing World

Date & Time: 29th October 2021, at 5:00 – 6:00 PM at SK Future Hall, Korea University (*Virtual*)



University of Guelph, Canada

Email address: mohanty@uoguelph.ca

Website: <https://www.plant.uoguelph.ca/mohanty>

Amar Mohanty is a Full Professor and OAC *Distinguished Research Chair in Sustainable Biomaterials* and is the Director of the *Bioproducts Discovery & Development Centre* at the University of Guelph. He is a former Michigan State University professor and is an international leader in the field of bioplastics, biocomposites and advanced biorefinery. His research focuses in engineering value-added uses of biomass wastes and industrial co-products from agro-food and biofuel industries. Circular economy, environmental sustainability, waste plastic valorization, biodegradable plastics as single-use plastic alternatives, biocarbon based composites and 3D printing of sustainable materials are other areas of his expertise. Prof. Mohanty is the *Editor-in-Chief* of Sustainable Composites, Composites Part C – Open Access (*ELSEVIER*).

He has more than 800 publications to his credit, including 415 peer-reviewed journal papers, 6 edited books, over 400 conference presentations, 25 book chapters, and 67 Patents awarded/applied (Google Scholar h-index 88, i10-index 358, and 38,157 total citations, - March 23, 2021).

Prof. Mohanty is a *Fellow of the Royal Society of Canada*, the *American Institute of Chemical Engineers*, the *Royal Society of Chemistry (UK)* and the *Society of Plastic Engineers*.

Prof. Mohanty received many awards, including the: JL White Innovation Award from the International Polymer Processing Society; Synergy Award for Innovation from Natural Sciences and Engineering Research Council of Canada (NSERC); Andrew Chase Forest Products Division Award from the American Institute of Chemical Engineers and the *Lifetime Achievement Award* from the BioEnvironmental Polymer Society (BEPS), USA.

Mohanty, A. K., Vivekanandhan, S., Pin, J. M., & Misra, M. (2018). Composites from renewable and sustainable resources: Challenges and innovations. *Science*, 362(6414), 536-542.

Mohanty, A. K., Misra, M; Hinrichsen, GI; 2000. Biofibres, biodegradable polymers and biocomposites: An overview. *Macromolecular Materials and Engineering* 276 (1), 1-24

Wu, F; Misra, M; Mohanty, A.K. (2020). Sustainable green composites from biodegradable plastics blend and natural fibre with balanced performance: Synergy of nano-structured blend and reactive extrusion. *Composites Science and Technology* 200, 108369

Meereboer, K. W; Misra. M; Mohanty, A. K. (2020), Review of recent advances in the biodegradability of polyhydroxyalkanoate (PHA) bioplastics and their composites, *Green Chemistry* 22 (17), 5519-5558

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