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# NAOUFAL BAHLOWANE (DR., HABIL)

**Lead Research & Technology Associate**

**LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY (LIST)**

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## RESEARCH ACTIVITIES

- Surface chemistry (thin films processing and heterogeneous catalysis)
- Functional mixed oxides (thin films synthesis, bulk and surface characterization, charge transport)
- Nanocomposite coatings with tunable properties for optics, catalysis and electrochemical energy storage
- Operando monitoring (Mass spectrometry, FTIR, QCM, Ellipsometry)
- Prototyping (deposition reactors: thermal and plasma CVD, ALD, hybrid CVD-ALD)

## POSITIONS

- **Lead Research & Technology Associate** “Functional *Nanocomposite coatings*” LIST; Luxembourg (since 2015)
- **Invited lecturer** “Surface Chemistry”, Zhejiang University, School of Materials Science and Engineering, China (2017-2023)
- **Project Leader** at CRP-Gabriel Lippmann; Luxembourg (2011-2015)
- **Academic senior councilor** (Akademischer Oberrat auf Zeit), Physical-Chemistry I department at Bielefeld University, Germany (2008-2011)
- **Assistant Professor** (Wissenschaftlicher Assistent), Physical-Chemistry I department at Bielefeld University, Germany (2002-2008)
- **Alexander von Humboldt Fellow** in the Physical-Chemistry I department, Bielefeld University, Germany (2001-2002)
- **Industry-attached fellow at Fukuoka University** in Resources recycling at 'FIRECS' Wakamatsu, Japan. Industrial partners, **TSP Co. Ltd** (Ukiha-shi, Japan) and **Tokiwa Co. Ltd** (Tokyo, Japan), (2000-2001)
- **JISTEC Fellow** in Advanced Materials, Department of Inorganic Composite Materials, Kyushu National Industrial Research Institute 'KNIRI' Tosu-shi, Japan (1998-2000)

## EDUCATION

- 2022-2023: **Executive Master, Innovation and Entrepreneurship**, HEC Paris, France,
- 29.01.2009: **Venia Legendi**, Bielefeld University, Germany, “*Physical Chemistry*”
- 24.11.2008: **Habilitation in Physical Chemistry**, Bielefeld University, Germany,  
“*Advances in thermal chemical vapor deposition of structural and functional materials*”  
Referred by: Dr. M.D. Allendorf (USA), Prof. M.L. Hitchman (UK), Prof. K. Samwer (Ger) and Prof. R. Fischer (Ger).
- 11.09.1998: **Doctoral degree** in Materials Engineering (Nov 1995 to Sept 1998) from Claude Bernard Lyon-1 University, France,  
“*Plasma assisted chemical vapor deposition of SiO<sub>x</sub>C<sub>y</sub> thin films: investigation of the adhesion on polymer and steel surfaces, and the evaluation of their performance as gas diffusion barriers*”
- 1994-1995: **Diplôme d'Etude Universitaire Approfondie** (DEA ~ Master II), Physico-chemical analysis/ Analytical chemistry from Claude Bernard Lyon-1 University, France,
- 1990-1994: *Maitrise* in Chemistry, University Hassan II, Casablanca, Morocco.

## PUBLICATIONS / CONFERENCES

**List of papers:** [https://scholar.google.com/citations?hl=en&user=Gi8c9FwAAAAJ&view\\_op=list\\_works&sortby=pubdate](https://scholar.google.com/citations?hl=en&user=Gi8c9FwAAAAJ&view_op=list_works&sortby=pubdate)

Paper selection

1. CNT nanoengineering for thermally stable selective solar absorption; VP. Prasad, N. Gautier, N. Bahlawane, *materials Today Communications*, 2021, 28, 102552
2. Conversion-Alloying Anode Materials for Sodium Ion Batteries, LB. Fang, N. Bahlawane et al, *Small*, 2021, 17, 2101137
3. Thermoresponsive Black VO<sub>2</sub>-Carbon Nanotube Composite Coatings for Solar Energy Harvesting, VP. Prasad, FV Ramirez, I. Papakonstantinou, IP. Parkin, N. Bahlawane, *ACS Applied Nanomaterials*, 2020, 3, 8848-8857
4. SiO<sub>2</sub> Thin Film Growth through a pure Atomic Layer Deposition Technique at Room Temperature; D. Arl, V. Roge, N. Adjero, BR. Pistillo, M. Sarr, N Bahlawane, D. Lenoble, *RCS Advances*, 2020, 10 (31), 18073-18081
5. Thermal Chemical Vapor Deposition of Superblack Randomly Oriented Carbon Nanotube Coatings; HJ Basheer, K Baba, N Bahlawane, *Physica Status Solidi- A*, 2020, 217 (8), 1900704
6. Enabling Full Conversion Reaction with High Reversibility to Approach Theoretical Capacity for Sodium Storage; Libin Fang, Caiyun Wang, Leilei Huangfu, Naoufal Bahlawane, He Tian, Yunhao Lu, Hongge Pan, Mi Yan, Yinzhu Jiang; *Advanced Functional Materials*, 2019, 29, 1906680
7. Thermal Conversion of Ethanol into Carbon Nanotube Coatings with Adjusted Packing Density, HJ Basheer, K Baba, N Bahlawane, *ACS Omega*, 2019, 4 (6), 10405-10410
8. Atomic layer deposition of vanadium oxides: process and application review; VP Prasad, N Bahlawane, Felix Mattelaer, Geert Rampelberg, Christophe Detavernier, L Fang, Y Jiang, K Martens, IP Parkin, I Papakonstantinou; *Materials Today Chemistry*, 2019, 12, 396-423
9. Study of VO<sub>2</sub> thin film synthesis by atomic layer deposition; VP Prasad, B Dey, S Bulou, T Schenk, N Bahlawane; *Materials Today Chemistry*, 2019 12, 332-342
10. Hetero-interface constructs ion reservoir to enhance conversion reaction kinetics for sodium/lithium storage; Libin Fang, Zhenyun Lan, Wenhao Guan, Peng Zhou, Naoufal Bahlawane, Wenping Sun, Yunhao Lu, Chu Liang, Mi Yan, Yinzhu Jiang; *Energy Storage Materials*, 2019 18, 107-113
11. Vanadium Oxide as a Key Constituent in Reconfigurable Metamaterials; CVS Kumar, F Maury, N Bahlawane; *IntechOpen, Matamaterials and Metasurfaces.*, Edited by Josep Canet-Ferrer, 189 (2018), DOI:10.5772/intechopen.780476
12. Prussian Blue Analogs for rechargeable batteries; Wang BQ., Han Y., Wang X., Bahlawane N., Pan HG., Yan M., Jiang Y.; *IScience*; 2018, 3, 110-133

## PATENTS

1. WO/2017/001406 Carbon-nanotube-based composite coating and production method thereof; **Naoufal Bahlawane**
2. WO/2017/001405 Ceramic composite and production thereof; **Naoufal Bahlawane**
3. WO/2018/060240 Transparent p-n junction providing a rectifying contact; **Jonathan Crepellere, Naoufal Bahlawane, Damien Lenoble, Renaud Leturcq**
4. WO/2018/060237 UV Detector Comprising a Rectifying p-n Junction; **Jonathan Crepellere, Naoufal Bahlawane, Damien Lenoble, Renaud Leturcq**
- 5.
6. WO/2008/006785 One-step method for applying a metal layer onto a substrate; **Katharina Kohse-Hoinghaus, Naoufal Bahlawane, Antony Premkumar**
7. DE 102006028749 Production of a transparent aluminum oxide protective layer on a glass substrate for household glassware comprises feeding aluminum-containing precursor compounds into a coating chamber containing a glass substrate and further processing; **Naoufal Bahlawane**
8. JP2002255545 Alumina sol materials, alpha-alumina powder and thin film obtained from alumina sol, and method for producing these; **Watanabe Tadahiko, Naoufal Bahlawane (バラワニ ナオフアル)**

## EDITORIAL ACTIVITIES

- Guest Editor in *Materials Today, Chemistry* (2019): Recent developments in Atomic Layer Deposition
- Guest Editor in *PSS-A*, (2019): Advances in CVD and ALD
- Member of the editorial board in *Coatings*, MDPI
- Guest Editor in *Nanoscience and Nanotechnology journal* (2017): Volume 16, issue 1-2; Nanocomposites: Synthesis and optical related applications

## ORGANIZATION ACTIVITIES

- Chair of the EuroCVD 22-Baltic ALD 16 Conference in Luxembourg (2019)/ <https://www.eurocvd-balticald2019.lu/>
- Chair of the Belux 3 in Luxembourg (2018)
- Co-Chair of the Belux 2 in IMEC, Belgium (2016)
- Chair of the Belux Workshop: BeLux1 in Luxembourg (2014),

## COMITIES AND NETWORKING

- **Chair** of the **International Advisory Board** of the EuroCVD (2019-2021)
- **Chair** of the **Collaborative Council** of Luxembourg Institute of Science and Technology (2020-2021)
- Member and president of the **Collaborative Council** of Luxembourg Institute of Science and Technology/2019-2021
- Starting January 2014: Member of the **International Advisory Board** of the EuroCVD
- Member of the **Technical Program Committee** of the MNE2020. (Leuven, Belgium, 14-18 September 2020)
- Member of the **Scientific Committee** of the RAF-ALD workshop since 2015
- Member of the **Scientific Committee** of the EuroCVD/Baltic ALD Conference, Leuven, June, 2020
- Member of the **International Program Committee** of the 45<sup>th</sup> International Conference on Micro & nano Engineering. (Rhodes, Greece, 23-26 September 2019)
- Member of the **Management Committees** of the COST actions:
  - MP1402: HERALD
  - CA15107: MultiComp
- Member of the **International Program Committee** of the Micro and Nano Engineering conference (MNE 2018) (Copenhagen, Denmark, 24-27 Sept 2018)
- Member of the **International Program Committee** of the 1<sup>st</sup> Nano-Fabrication, Devices & Metrology Workshop. TNO, (Eindhoven, Netherlands, 19-20 June 2017)
- Member of the **International Scientific Committee** of the 43<sup>rd</sup> International Conference on Micro and Nanofabrication (MNE 2017) (Braga, Portugal, 18-22 Sept 2017)
- Member of the **International Advisory Committee** of the International Conference on Frontiers in Materials Science for Energy and Environment (ICFMS 2012)

## AWARDS

- JISTEC Fellowship (1998), Japan
- AvH Fellowship (2001) Germany

## SUPERVISIONS

- Previous supervisions:
  - o Postdocs
    - Dr. Antony Premkumar, supervised topic: CVD of metals. Actually, Research Scientist position at IMEC, Belgium-
    - Dr. Zhen-Yu Tian, supervised topic: Catalysis on model complex oxides. Currently, Full Professor at the Chinese Academy of Science (CAS), Beijing, China.
    - Dr. Yinzhu Jiang, supervised topic: Transport in complex oxides. Currently, Full Professor at Zhejiang University, China
    - Barthélémy Aspe, supervised topic: Advanced Magneto-Electric nanocomposite coatings for noise energy harvesting. Currently an associate Professor at Orléans University, France
  - o PhD supervisions:
    - Dr. Patrick Hervé Tchoua Ngamou, supervised topic: Catalysis and charge transport in perovskites. Currently, occupies a position of a research assistant at Forschungszentrum Jülich, Germany.
    - Dr. Vincent Vannier. supervised topic: Catalysis and charge transport in spinels. Currently, occupies a position of a researcher at Krohn Optosens GmbH, Germany.
    - Sunil Kumar (Strongly correlated systems, defended in Sept 2017, received a Léopold Escande price. Currently a Research Scientist at IMEC, Belgium
    - Hameeda Bascheer. Supervised topic: CNT-based Selective solar absorbers. Currently a Senior Process Engineer at ASM/Belgium
    - Prasadam Vasu Prasad. Supervised topic: Smart black coating for energy harvesting. Worked as Senior Process Engineer at Bühler.