

CURRICULUM VITAE

PD Dr. Daniel Ayuk Mbi Egbe



INFORMATION ABOUT THE PERSON

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EDUCATION

- 02/2000 – 01/2006 Habilitation in Organic Chemistry. Research topic: *Structure-properties relationships of hybrid arylene-ethynylene/ arylene-vinylene polymers* & Lehrprobe: *Polymerchemische Aspekte von Klebstoffen* at the Friedrich-Schiller University (FSU) Jena, Germany. Mentor: Prof. Dr. Elisabeth Klemm.
- 04/1996-07/1999 PhD (Dr. rer. nat.) in Organic and Macromolecular Chemistry
Dissertation: *Synthesis, characterization and photophysical properties of 2,2'-bipyridine-containing poly(aryleneethynylene)s* at the Institute of Organic Chemistry and Macromolecular Chemistry of the FSU Jena.
Supervisor: Prof. Dr. Elisabeth Klemm. Grade: magna cum laude.
- 11/1994-10/1995 MSc (former German *Diplom*) in Chemistry at the FSU Jena. Thesis: *Synthetic siderophores on the basis of polyhydroxy compounds* at the Hans-Knöll-Institute for Natural Products Research Jena e. V.
Supervisor: Prof. Dr. Dieter Klemm. Graduation: Diplom-Chemiker.
- 10/1992-10/1995 Chemistry Student at the Friedrich-Schiller University Jena, Germany
- 10/1986-06/1991 Student of Chemistry and Physics at former University of Yaounde (now: University of Yaounde I), Cameroon. Graduation: BSc Hons in Organic Chemistry.
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09/1979-06/1986 Student at Bilingual High School Molyko-Buea. Certificates: BEPC (1983), Probatoire C (1985), Baccalaureat Série C (1986), GCE/A-Level in 3 papers (1986).

WORK EXPERIENCE

10/2021 – present Scientific coworker at Energieinstitut an der Johannes Kepler University (JKU) Linz, Austria

04/2009-present Coworker in research and teaching at the Linz Institute for Organic Solar Cells (LIOS) (04/2009-09/2016), then at the Institute of Polymeric Materials and Testing (IPMT) (10/2016-03/2021) of JKU Linz, Austria. Since 04/2021 guest scientist at IPMT of JKU Linz, Austria

02/2011-present International Coordinator of the African Network for Solar Energy (ANSOLE) and Chairperson of ANSOLE e.V. Jena, Germany

05/2015-present International coordinator of the scientific platform “Bridging Africa, Latin America and Europe on Water and Renewable Energies Applications” (BALEWARE)

10/2007-11/2008 Senior scientist at the Institute for Print and Media Technology, Faculty of Mechanical Engineering, Chemnitz University of Technology, Germany (Group leader: Prof. Reinhard Baumann)

10/2006-09/2007 Senior Scientist in the Laboratory of Macromolecular Chemistry and Nanoscience (SMN) at the Eindhoven University of Technology, The Netherlands (group leader: Prof. Ulrich S. Schubert).

02/2006-08/2006 Postdoctoral stay at Max-Planck-Institute for Polymer Research, Mainz, Germany (group leader: Prof. Klaus Müllen).

04/1996-01/2006 Scientific coworker in research and teaching at the Institute of Organic Chemistry and Macromolecular Chemistry of the Friedrich Schiller University Jena, Germany

03/1993-10/1995 Student research assistant at Hans-Knöll-Institute for Natural Products Research, Jena, Germany.

PUBLICATIONS

Books

Energies Renouvelables en Afrique Subsaharienne (2012) César Kapseu, Noël Djongyang, George Elambo Nkeng, Maturin Petsoko, Daniel Ayuk Mbi Egbe, Edition Harmattan, ISBN: 978-2-296-99102-6

Solar Energy in Africa : Possibilities & Capabilities (2021). Edited, Mammo Muchie, Angathevar Baskaran & Daniel Ayuk Mbi Egbe, Red Sea Press, US, 276 pages, ISBN : 978-1-56902-733-2

Refereed publications

[127] **Static, Dynamic, Dielectric, and Magnetic Investigations on AnE-PVstat: PCBM Polymer Solar Cells under Open-Circuit Conditions.** Radaoui, M.; Louhichi, M.; Ben Fredj, A.; Romdhane, S.; Egbe, D. A. M.; Bouchriha, H., *J. Phys. Chem. C* **2021**, *125*, 37, 20706–20716

[126] **Blend ratio and applied voltage effects on the charge recombination in bulk heterojunction polymer solar cells based on anthracene-containing poly(arylene-ethynylene)-alt-poly(arylene-vinylene) studied using magnetoconductance.** Radaoui, M.; Taboubi, O.; Ben Fredj, A.; Romdhane, S.; Egbe, D. A. M.; Bouchriha, H., *Journal of Physics and Chemistry of Solids* **2021**, *156*, 110190.

[125] **Annealing temperature dependence of the performance of bulk heterojunction polymer: Fullerene solar cells under short and open circuit conditions.** Radaoui, M.; Ben Fredj, A.; Romdhane, S.; Egbe, D. A. M.; Bouchriha, H., *Synthetic Metals* **2021**, *271*, 116611

[124] **Theoretical DFT Study of Optical and Electronic Properties of Anthracene Containing PPE-PPVs.** Hleli, E.; Mbarek, M.; Gouid, Z.; Ulbricht, C.; Romdhane, S.; Ben Said, R.; M. Guesmi, M.; Egbe, D. A. M.; Bouchriha, H., *Journal of Physics and Chemistry of Solids* **2020**, *136*, 109157.

[123] **Defining side chain successions in anthracene-based poly(arylene ethynylene)-alt-poly(phenylene vinylene)s – Probing structure-property relationships,** Ulbricht, C.; Bouguerra, N.; Ngi, S. I.; Brüggemann, O.; Egbe, D. A. M., *Polym. Chem.* 2019. *10*, 5339-5347.

[122] **Role of Electron Blocking Layer in Performance Improvement of Organic Diodes**

Hleli, E.; Radaoui, M.; Ben Hamed, Z.; Romdhane, S.; Egbe, D. A. M.; Bouchriha, H. *Journal of Elec Materi* **2019**, *48* (5), 2794-2800.

[121] **Role of triplet-doublet quenching in organic magnetoconductance.** Taboubi, O.; Radaoui, M.; Saidi, H.; Ben-Fredj, A.; Romdhane, S.; Egbe, D. A. M.; Bouchriha, H., *Organic Electronics* **2018**, *62*, 637-642

[120] **Controlling donor crystallinity and phase separation in bulk heterojunction solar cells by the introduction of orthogonal solvent additives.** Alam, S.; Meitzner, R.; Kaestner, C.; Ulbricht, C.; Höppener, S.; Egbe, D. A. M.; Schubert, U. S.; Hoppe, H. *MRS Advances* **2018**, *3* (33), 1891-1900.

[119] **Impact of alkoxy side chains on morphology and excitonic coupling in PPE-PPV copolymer thin films.** Guesmia, M.; Ben Fredj, A.; Romdhane, S.; Bouguerra, N.; Egbe, D. A. M.; Lang, R.W.; Havlicek, M.; Bouchriha, H., *Journal of Luminescence* **2018**, *203*, 447–454

[118] **Improvement of polymer: Fullerene bulk heterojunction morphology via**

temperature and anti-solvent effect. Hleli, E.; Alam, S.; Saaidia, A.; Kästner, C.; Höppener, S.; Ulbricht, C.; Romdhane, S.; Ben Fredj, A.; Egbe, D. A. M.; Schubert, U. S.; Bouchriha, H.; Hoppe, H., *Synthetic Metals* **2018**, *243*, 8–16.

[117] **Organic solar cells based on anthracene-containing PPE-PPVs and non-fullerene acceptors.** Alam, S.; Meitzner, R.; Nwadiaru, O. V.; Friebe, C.; Cann, J.; Ahner, J.; Ulbricht, C.; Kan, Z.; Höppener, S.; Hager, M. D.; Egbe, D. A. M.; Welch, G. C.; Laquai, F.; Schubert, U. S.; Hoppe, H., *Chemical Papers* **2018**, *72*, 1769-1779

[116] **Temperature-Tuning of Optical Properties and Molecular Aggregation in AnE-PVstat Copolymer Solution.** Saaidia, A.; Saidani, M. A.; Hleli, E.; Alam, S.; Ulbricht, C.; Romdhane, S.; Fredj, A. B.; Kästner, C.; Egbe, D. A. M.; Schubert, U. S.; Bouchriha, H.; Hoppe, H.J. *Phys. Chem. C* **2018**, *122*, 3965-3969.

[115] **Poly[(arylene ethynylene)-alt-(arylene vinylene)]s Based on Anthanthrone and Its Derivatives: Synthesis and Photophysical, Electrochemical, Electroluminescent, and Photovoltaic Properties.** John, S. V.; Cimrová, V.; Ulbricht, C.; Pokorná, V.; Růžička, A.; Giguère, J.-B.; Lafleur-Lambert, A.; Morin, J.-M.; Iwuoha, E.; Egbe, D. A. M., *Macromolecules* **2017**, *50*, 8357-8371.

[114] **Thickness dependence of organic magnetoconductance of polymeric semiconductor device based on an ambipolar polymer AnE-PVstat.** Taboubi, O.; Radaoui, M.; Ben Fredj, A.; Romdhane, S.; Egbe, D. A. M.; Bouchriha, H.; *Synthetic Metals* **2017**, *227*, 117–121.

[113] **The effect of the Al concentration on efficiency of the hybrid AnE-PVstat:Al-doped ZnO nanocrystal solar cells.** Louhichi, M.; Ben Hamed, Z.; Romdhane, S.; Egbe, D. A. M.; Bouchriha, H., *Optical Materials* **2017**, *73*, 473-483.

[112] **Morphology-dependent exciton diffusion length in PPE-PPVs thin films as revealed by a Forster mechanism based-study.** Saaidia, A.; Saidania, M. A.; Romdhane, S.; Ben Fredj, A.; Egbe, D. A. M.; Tekin, E.; Bouchriha, H., *Synthetic Metals* **2017**, *226*, 177–182.

[111] **Revelation of interfacial energetics in organic multi-heterojunctions.** Kästner, C.; Vandewal, K.; Egbe, D. A. M.; Hoppe, H *Adv. Sci.* **2017**, *4*, 1600331

[110] **Explaining the Behavior of the Cyclic Voltammogram upon Oxidation of a Poly(1,4-phenyleneethynylene)-alt-poly(1,4-phenylene-vinylene) Copolymer using Spectroscopic Techniques.** Enengl, C.; Enengl, S.; Bouguerra, N.; Havlicek, M.; Neugebauer, H.; Egbe, D. A. M. *ChemPhysChem* **2017**, *18*, 93 – 100

[109] **Polymers with Alternating Anthracene and Phenylene Building Blocks Linked by Ethynylene and/or Vinylene Units: Studying Structure-Properties-Relationships.** Boudiba, S.; Růžička, A.; Ulbricht, C., Enengl, S.; Enengl, C.; Gasiowski, J.; Yumusak, C.; Pokorná, V.;

Výprachtický, D.; Hingerl, K.; Zahn, D. R. T.; Tinti, F.; Camaioni, N.; Bouguessa, S.; Gouasmia, A.; Cimrová, V.; Egbe, D. A. M. *Journal Polym. Sci: Polym. Chem.* **2017**, *55*, 129–143

[108] **Temperature-dependent intermolecular coupling and exciton migration in an anthracene containing PPE-PPV copolymer.** Guesmi, M.; Saidania, M. A.; Ben Fredj, A.; Romdhane, S.; Egbe, D.A.M.; R. Chtourou, R.; Bouchriha, H.; *Synthetic Metals* **2016**, *220*, 221–226

[107] **Modulation of charge carrier mobility by side-chain engineering of bi(thienylenevinylene)thiophene containing PPE–PPVs.** Jadhav, R. R.; Camaioni, N.; Oppelt, K.; Tinti, F.; Gazzano, M.; Fattori, V.; Wadgaonkar, P. P.; Rathgeber, S.; Hoppe, H.; Egbe, D. A. M., *RSC Adv.* **2016**, *6*, 51642–51648

[106] **Synthesis and Photophysical and Electroluminescent Properties of Poly(1,4-phenylene-ethynylene)-*alt*-poly(1,4-phenylene-vinylene)s with Various Dissymmetric Substitution of Alkoxy Side Chains.** Bouguerra, N.; Ruzicka, A.; Ulbricht, C.; Enengl, C.; Enengl, S.; Pokorna, V.; Vyprachtický, D.; Tordin, E.; Aitout, R.; Cimrova, V.; Egbe, D. A. M., *Macromolecules* **2016**, *49*, 455-464.

[105] **Locally resolved large phase separation in polymer fullerene blends** Kästner, C.; Seeland, M.; Egbe, D. A. M.; Hoppe, H.; *J. Mater. Chem. A* **2016**, *4*, 1244-1250

[104] **Analysis of an ac response of an organic bulk heterojunction solar cell based on AnE-PVstat:PCBM.** Radaoui, M.; Ben Fredj, A.; Romdhane, S.; Egbe, D. A. M.; Sariciftci, N. S.; Bouchriha, H.; *Synthetic Metals, Part B*, **2015**, *210*, 352-356

[103] **Solar cells: From Sunlight to Electricity.** Günes, S.; Abdel-Mottaleb, M. S. A.; Hoppe, H.; Egbe, D. A. M.; *International Journal of Photoenergy* **2015**, Volume 2015, 1-1, doi.org/10.11552015/173963

[102] **Cul as Versatile Hole-Selective Contact for Organic Solar Cells Based on Anthracene-Containing PPE-PPV.** Mohamed, S. A.; Gasiorowski, J.; Hingerl, K.; Zahn, D. R. T.; Scharber, M. C.; Obayya, S. S. A.; El-Mansy, M. K.; Sariciftci, N. S.; Egbe, D. A. M.; Stadler, P., *Solar Energy Materials & Solar Cells* **2015**, *143*, 369-374

[101] **Control of carrier mobilities for performance enhancement of anthracene-based polymer solar cells.** Usluer, Ö.; Boudiba, S.; Egbe, D. A. M.; Hirsch, L.; Abbas, M. *RSC Adv.* **2015**, *5*, 50668-50672

[100] **Vacuum-free processed bulk heterojunction solar cells with E-GaIn cathode as an alternative to Al electrode.** Ongul, F.; Yuksel, S. A.; Bozar, S.; Cakmak, G.; Guney, H. Y.; Egbe, D. A. M.; Günes, S. *J. Phys. D: Appl. Phys.* **2015**, *48*, 175102 (8pp)

[99] **Iodide-capped PbS quantum dots: Full optical characterization of a versatile absorber** Stadler, P.; Mohamed, S. A.; Gasiorowski, J.; Sytnyk, M.; Yakunin, S.; Scharber, M. C.; Enengl, C.; Enengl, S.; Egbe, D. A. M.; El-Mansy, M. K.; Obayya, S. S. A.; Sariciftci, N. S.; Hingerl, K.; Heiss, W. *Adv. Mater.* **2015**, *27*, 1533-1539

[98] **Polymer Aggregation Control in Polymer:Fullerene Bulk Heterojunctions Adapted from Solution.** Kästner, C.; Egbe, D. A. M.; Hoppe, H. *J. Mater. Chem. A* **2015**, *3*, 395-403

[97] **Spectroscopic characterization of a red light-emitting polymer: Anthracene-containing poly(p-arylene-ethynylene)-alt-poly(p-arylene-vinylene).** Radaoui, M.; Hleli, E.; Ben Hamed, Z.; Ben Fredj, A.; Hrichi, H.; Romdhane, S.; Egbe, D. A. M., Bouchriha, H. *Material Science in Semiconductor Processing* **2015**, *30*, 285-291

[96] **Using the alkynyl-substituted rhenium(I) complex (4,4'-bisphenyl-ethynyl-2,2'-bipyridyl)Re(CO)₃Cl as catalyst for CO₂ reduction – Synthesis, Characterization and Application.** Portenkirchner, E.; Schlager, S.; Apaydin, D.; Oppelt, K. T.; Himmelsbach, M.; Egbe, D. A. M.; Neugebauer, H.; Knör, G.; Yoshida, T.; Sariciftci, N. S. *J. Electroanalysis*. **2015**, *6*, 185-197

[95] **Solar Cells.** Günes, S.; Egbe, D. A. M.; Sariciftci, S, *Encyclopedia of Polymer Science and Technology* **2014**, *12*, 626-655

[94] **Role of recombination, dissociation, and competition between exciton-charge reactions in magnetoconductance of polymeric semiconductor device.** Radaoui, M.; Saidani, M. A.; Ben Fredj, A.; Romdhane, S.; Havlicek, M.; Egbe, D. A. M.; Sariciftci, N. S.; Bouchriha, H. *J. Appl. Phys.* **2014**, *116*, 183901-1-9

[93] **New Electroluminescent Carbazole-Containing Conjugated Polymer: Synthesis, Photophysics, and Electroluminescence.** Cimrova, V.; Ulbricht, C.; Dzhubarov, V.; Výchrtický, D.; Egbe, D. A. M., *Polymer* **2014**, *55*, 6220-6226.

[92] **Correlating domain purity with charge carrier mobility in bulk heterojunction polymer solar cells.** Kästner, C.; Jiao, X.; Egbe, D. A. M.; Ade, H.; Hoppe, H., *Proc. of SPIE* **2014**, *9184*, 91840Z-1-7

[91] **A rhodium coordinated poly(arylene-ethynylene)-alt-poly(arylene-vinylene) copolymer acting as photocatalyst for visible-light powered NAD⁺/ NADH reduction.** Oppelt, K. T.; Gasiorowski, J.; Egbe, D. A. M.; Kollender, J. P.; Himmelsbach, M.; Hassel, A. W.; Sariciftci, N. S.; Knör, G., *J. Am. Soc.* **2014**, *136*, 12721-12729

[90] **Control of charge generation and recombination in ternary polymer/polymer:fullerene photovoltaic blends using amorphous and semi-crystalline copolymers as donors.** Mangold, H.; Bakulin, A. A.; Howard, I. A.; Kästner, C.; Egbe, D. A. M.; Hoppe, H.; Laquai, F, *Phys. Chem. Chem. Phys.* **2014**, *16*, 20329-20337

[89] **Effect of Varying Thiophene Units on Charge Transport and Photovoltaic Properties of Poly(phenyleneethynylene)-alt-poly(phenylenevinylene)s Polymers.** Adam, G.; Johannes, T.; White, M.; Montaigne, A.; Ulbricht, C.; Birckner, E.; Rathgeber, S.; Hoppe, H.; Sariciftci, N. S.; Egbe, D. A. M., *Macromol. Chem. Phys.* **2014**, *215*, 1473-1484

[88] **Multifrequency X, W-band ESR study on photo-induced ion radical formation in solid films of mono- and di-fullerenes embedded in conjugated polymers.** Konkin, A.; Ritter, U.;

Scharff, P.; Mamin, G.; Aganov, A.; Orlinskii, S.; Krinichnyi, V.; Egbe, D.A.M.; Ecke, G.; Romanus, H, *Carbon* **2014**, *77*, 11-17

[87] **Effect of side-chains on charge transport of anthracene-based PPE-PPV copolymers**

Tinti, F.; Sabir, F. K.; Gazzano, M.; Righi, S.; Usluer, Ö.; Ulbricht, C.; Yohannes, T.; Egbe, D. A. M.; Camaioni, N., *Macromol. Chem. Phys*, **2014**, *215*, 452-457

[86] **Improvement in photovoltaic performance of anthracene-containing PPE-PPV polymer-based bulk heterojunction solar cells with silver nanoparticles.** Tore, N.; Parlak E. A.; Tumay, T. A.; Kavak P.; Sarioglan S.; Bozar, S.; Günes, S.; Ulbricht, C.; Egbe, D. A. M., *J Nanopart Res* **2014**, *16*, 2298

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[82] **Combined Effect of Active Layer Thickness and LiF Layer on Photovoltaic Performance of an Anthracene-Containing PPE-PPV Copolymer.** Dobre, N.; Denk, P.; Boudiba, S.; Scharber, M.; Sariciftci, N. S.; Egbe, D. A. M.; Buda, M. *Digest Journal of Nanomaterials and Biostructures* **2013**, *8*, 1475-1482

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[80] **Franck-Condon analysis of the photoluminescence spectra of atriple-bond containing polymer as a solution and as a thin film.** Saidani, M. A.; Ben Fredj, A.; Ben Hamed, Z.; Romdhane, S.; Ulbricht, C.; Egbe, D.A.M.; Bouchriha, H.; *Synthetic Metals* 2013, *184*, 83–85.

[79] **Organic Bulk Heterojunction Solar Cells Based on P3HT and Anthracene-Containing PPE-PPV: Fabrication, Characterization and Modeling.** Aazou, S.; Ibral, A.; White, M. S.; Kaltenbrunner, M.; Glowacki, E. D.; Egbe, D. A. M.; Sariciftci, N. S.; Assaid, E. M. *Journal of Optoelectronics and Advanced Materials* **2013**, *15* 395-404.

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[74] Improvement of photovoltaic performance by ternary blending of amorphous and semi-crystalline polymer analogues with PCBM. Kästner, C.; Rathgeber, S.; Egbe, D. A. M.; Hoppe, H. *J. Mater. Chem. A* **2013**, *1*, 3961–3969.

[73] **Improved photovoltaic performance of PPV-based copolymer using optimized fullerene-based counterparts**. Troshin, P. A.; Mukhacheva, O. A.; Usluer, Ö.; Goryachev, A. E.; Akkuratov, A. V.; Susarova, D. K.; Dremova, N. N.; Rathgeber, S.; Sariciftci, N. S.; Vladimir F. Razumov, V. F., Egbe, D. A. M. *Adv. Energy Mater.* **2013**, *3*, 161-166.

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