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Publications

Long-term testing results of a high-performance 450 V Polymer Aluminum Electrolytic Capacitor

Neupane, S., Olawale, O. E., Adashkevich, V., Greenbank, W., Tavares, L. & Ebel, T., 2023, *2023 25th European Conference on Power Electronics and Applications (EPE'23 ECCE Europe)*. IEEE, 6 p. 145

Helium-ion irradiation effects in metalized polypropylene

Neupane, S., Greenbank, W., Chiriaev, S., Ebel, T. & Tavares, L., 2023.

Effect of Focused Helium-ion Beam on polypropylene-based thin film capacitor

Neupane, S., Chiriaev, S., Greenbank, W., Laghrissi, A., Gkionis-Konstantatos, O., Fiutowski, J., Leissner, T., Ebel, T. & Tavares, L., 2023.

An Isolated Grid-Connected Charger with Reduced DC-Link Capacitor and Grid Filter Requirement

Chatterjee, C., Neupane, S., India, I., India, I., Greenbank, W., Tavares, L. & Ebel, T., 2023, *2023 11th International Conference on Power Electronics and ECCE Asia (ICPE 2023 - ECCE Asia)*. IEEE, p. 1609-1614 (IEEE Transactions on Transportation Electrification (Early Access)).

Nanoscale thinning of metal-coated polypropylene films by Helium-ion irradiation

Neupane, S., Chiriaev, S., Greenbank, W., Gkionis-Konstantatos, O., Leissner, T., Ebel, T. & Tavares, L., Oct 2023, In: *Power Electronic Devices and Components*. 6, 6 p., 100046.

Development of a New High-performance Polymer Aluminium Electrolytic Capacitor

Neupane, S., Gruia, M., Buhrkal-Donau, S., Greenbank, W., Tavares, L. & Ebel, T., Sept 2023.

Nanoscale thinning of metal-coated polypropylene films by Helium-ion irradiation

Neupane, S., Chiriaev, S., Greenbank, W., Gkionis-Konstantatos, O., Leissner, T., Ebel, T. & Tavares, L., 18. Oct 2023, In: *Power Electronic Devices and Components*. 6, 6 p., 100046.

Out-of-plane surface patterning by subsurface processing of polymer substrates with focused ion beams

Chiriaev, S., Tavares, L., Adashkevich, V., Goszczak, A. J. & Rubahn, H.-G., 6. Nov 2020, In: *Beilstein Journal of Nanotechnology*. 11, p. 1693-1703

Semiconducting Supramolecular Organic Frameworks Assembled from a Near-Infrared Fluorescent Macrocyclic Probe and Fullerenes

Kaur, R., Sen, S., Larsen, M. C., Tavares, L., Kjelstrup-Hansen, J., Ishida, M., Zieleniewska, A., Lynch, V. M., Bähring, S., Guldi, D. M., Sessler, J. L. & Jana, A., 1. Jul 2020, In: *Journal of the American Chemical Society*. 142, 26, p. 11497-11505

Height patterning of nanostructured surfaces with a focused helium ion beam: a precise and gentle non-sputtering method

Tavares, L., Chiriaev, S., Adashkevich, V., Taboryski, R. & Rubahn, H. G., 3. Apr 2020, In: *Nanotechnology*. 31, 14, 1 p.

Surface-Controlled Crystal Alignment of Naphthyl End-Capped Oligothiophene on Graphene: Thin-Film Growth Studied by In Situ X-ray Diffraction

Huss-Hansen, M., Hodas, M., Mrkyvkova, N., Hagara, J., Jensen, B. B. E., Osadnik, A., Lützen, A., Majková, E., Siffalovic, P., Schreiber, F., Tavares, L., Kjelstrup-Hansen, J. & Knaapila, M., 3. Mar 2020, In: *Langmuir*. 36, 8, p. 1898-1906

Organic light-emitting transistors

Tavares, L. & Kjelstrup-Hansen, J., 2019, *World Scientific Series in Nanoscience and Nanotechnology: Volume 2: devices from hybrid and organic materials*. Turkovic, V., Madsen, M. & Rubahn, H.-G. (eds.). World Scientific, Vol. 2. p. 243-274 (World Scientific Series in Nanoscience and Nanotechnology, Vol. 17).

Structural evaluation of 5,5'-bis(naphth-2-yl)-2,2'-bithiophene in organic field-effect transistors with n-octadecyltrichlorosilane coated SiO₂ gate dielectric

Lauritzen, A. E., Torkkeli, M., Bikondoa, O., Linnet, J., Tavares, L., Kjelstrup-Hansen, J. & Knaapila, M., 12. Jun 2018, In: *Langmuir*. 34, 23, p. 6727-6736

FIB NANOPATTERNING OF METAL FILMS ON PMMA SUBSTRATES: NON-SPUTTERING MODE

Tavares, L., Adashkevich, V., Chiriaev, S. & Rubahn, H.-G., 11. Jun 2018.

Helium Ion Microscopy for the imaging of biological samples

Leißner, T., Tavares, L., Gustafsson, L. R., Rubahn, H.-G., Kjelstrup-Hansen, J. & Marcussen, N., 11. Jun 2018.

FIB NANOPATTERNING OF METAL FILMS ON PMMA SUBSTRATES: NON-SPUTTERING MODE

Tavares, L., Adashkevich, V., Chiriaev, S. & Rubahn, H.-G., 31. May 2018.

Helium Ion Microscopy for the imaging of biological samples

Leißner, T., Tavares, L., Gustafsson, L. R., Rubahn, H.-G., Kjelstrup-Hansen, J. & Marcussen, N., 31. May 2018.

Structural Evaluation of 5,5'-Bis(naphth-2-yl)-2,2'-bithiophene in Organic Field-Effect Transistors with n-Octadecyltrichlorosilane Coated SiO₂ Gate Dielectric

Lauritzen, A. E., Torkkeli, M., Bikondoa, O., Linnet, J., Tavares, L., Kjelstrup-Hansen, J. & Knaapila, M., 31. May 2018.

Laser-induced charge separation in organic nanofibers: a joint experimental and theoretical investigation

Tavares, L., Liu, Y., Kjelstrup-Hansen, J., Behn, D., Siebels, J., Kipp, T. & Alf, M., 1. Feb 2018, In: *Organic Electronics*. 53, p. 20-25

Enhanced photoresponsivity in organic field effect transistors by silver nanoparticles

Linnet, J., Runge Walther, A., Albrektsen, O., Tavares, L., Eriksen, R. L., Jensen, P. B. W., Osadnik, A., Hassing, S., Lützen, A. & Kjelstrup-Hansen, J., 2017, In: *Organic Electronics*. 46, p. 270-275

Structural stability of naphthyl end-capped oligothiophenes in organic field-effect transistors measured by grazing-incidence X-ray diffraction *in operando*

Huss-Hansen, M., Lauritzen, A. E., Bikondoa, O., Torkkeli, M., Tavares, L., Knaapila, M. & Kjelstrup-Hansen, J., Oct 2017, In: *Organic Electronics*. 49, p. 375-381

Laser-induced charge separation in organic nanofibers

Tavares, L., Liu, Y., Behn, D., Siebels, J., Kipp, T., Alf, M. & Kjelstrup-Hansen, J., 30. Nov 2016.

Organic Molecular Films as Light-Emitting and Light-Confining Material in Rolled-Up AlInP Semiconductor Microtube Resonators

Kietzmann, S., Stelow, C., Tavares, L., Schramm, A., Penttinen, J.-P., Hakkarainen, T. V., Osadnik, A., Lützen, A., Kjelstrup-Hansen, J., Alf, M. & Kipp, T., 27. Oct 2015, In: *ACS Photonics*. 2, 11, p. 1532-1538

Light sensors based on organic phototransistors with absorption-enhancing nanoparticles

Runge Walther, A., Linnet, J., Albrektsen, O., Tavares, L., Eriksen, R. L., Jensen, P. B. W., Hassing, S., Lützen, A., Osadnik, A., Fabrim, Z. E. & Kjelstrup-Hansen, J., 29. Sept 2015. 1 p.

Efficient Exciton Diffusion and Resonance-Energy Transfer in Multi-Layered Organic Epitaxial Nanofibers

Tavares, L., Cadelano, M., Quochi, F., Simbrunner, C., Schwabegger, G., Saba, M., Mura, A., Bongiovanni, G., da Silva Filho, D. A., Ferreira da Cunha, W., Rubahn, H.-G. & Kjelstrup-Hansen, J., 9. Jul 2015, In: *The Journal of Physical*

Parallel integration of aligned carbon strings in polymer composite: Dielectrophoretic preparation, finite element simulation and electrical characterization

Sandsaunet, M. U., Knaapila, M., Tavares, L., Kjelstrup-Hansen, J. & Helgesen, G., 1. Oct 2015, In: Polymer Composites. 36, 10, p. 1866-1874

The photophysics of luminescence in multilayered organic nanofibers

Tavares, L., Quochi, F., Simbrunner, C., Schwabegger, G., Rubahn, H.-G. & Kjelstrup-Hansen, J., 13. Nov 2014.

The photophysics of luminescence in multilayered organic nanofibers

Tavares, L., Quochi, F., Simbrunner, C., Schwabegger, G., Rubahn, H.-G. & Kjelstrup-Hansen, J., 1. Nov 2014.

Advancement in organic nanofiber based transistors

Jensen, P. B. W., Kjelstrup-Hansen, J., Tavares, L. & Rubahn, H.-G., 26. May 2014. 1 p.

Bilayer polymer/oxide coating for electroluminescent organic semiconductors

Tavares, L., 2014.

Laser-induced charge separation in organic nanofibers

Tavares, L., Behn, D., Kjelstrup-Hansen, J. & Mews, A., 2014.

Laser-induced charge separation in organic nanofibers

Tavares, L., Behn, D., Kjelstrup-Hansen, J. & Mews, A., 2014.

Low-voltage organic phototransistors based on naphthyl end-capped oligothiophene nanofibers

Liu, X., Tavares, L., Osadnik, A., Larsen Lausen, J., Kongsted, J., Lützen, A., Rubahn, H.-G. & Kjelstrup-Hansen, J., Jun 2014, In: Organic Electronics. 15, 6, p. 1273-1281 9 p.

Multicolored Nanofiber Device

With Jensen, P. B., Kjelstrup-Hansen, J., Tavares, L. & Rubahn, H.-G., 4. Dec 2013.

Morphological Tuning of the Plasmon Dispersion Relation in Dielectric-Loaded Nanofiber Waveguides

Leißner, T., Lemke, C., Fiutowski, J., Willers Radke, J., Klick, A., Tavares, L., Kjelstrup-Hansen, J., Rubahn, H.-G. & Bauer, M., 24. Jul 2013, In: Physical Review Letters. 111, 4, 5 p., 046802.

Morphological Tuning of the Plasmon Dispersion Relation in Dielectric-Loaded Nanofiber Waveguides

Leißner, T., Lemke, C., Fiutowski, J., Willers Radke, J., Klick, A., Tavares, L., Kjelstrup-Hansen, J., Rubahn, H.-G. & Bauer, M., 8. Jul 2013. 1 p.

Multicolored Nanofiber Based Organic Light-Emitting Transistor

With Jensen, P. B., Kjelstrup-Hansen, J., Tavares, L. & Rubahn, H.-G., 27. May 2013. 1 p.

Surface plasmon polariton propagation in organic nanofiber based plasmonic waveguides

Leißner, T., Lemke, C., Jauernik, S., Müller, M., Fiutowski, J., Tavares, L., Thilsing-Hansen, K., Kjelstrup-Hansen, J., Magnussen, O., Rubahn, H.-G. & Bauer, M., 28. Mar 2013, In: Optics Express. 21, 7, p. 8251-8260 10 p.

Ultrasmall transistor-based light sources

With Jensen, P. B., Tavares, L., Kjelstrup-Hansen, J. & Rubahn, H.-G., 25. Apr 2012. 1 p.

Localized and guided electroluminescence from roll printed organic nanofibres

Tavares, L., Kjelstrup-Hansen, J. & Rubahn, H.-G., 2012, In: Nanotechnology. 23, p. 425203

Nanotag luminescent fingerprint anti-counterfeiting technology

Radziwon, M. J., Rubahn, H.-G., Johansen, S. & Tavares, L., 2012, In: Nanoscale Research Letters. 7, 1, p. 262-8 p.

Integration of organic nanofibers by soft transfer techniques and nanostenciling

Tavares, L., 31. Aug 2011, Syddansk Universitet. Det Tekniske Fakultet. 116 p.

Bilayer polymer/oxide coating for organic semiconductors

Tavares, L., Kjelstrup-Hansen, J., Rubahn, H.-G. & Sturm, H., 12. May 2011.

Optical properties of microstructured surface-grown and transferred organic nanofibers

Kjelstrup-Hansen, J., Tavares, L., Oliveira Hansen, R. M. D., Liu, X., Bordo, K. & Rubahn, H.-G., 5. May 2011, In: Journal of Nanophotonics. 5, 051701

Efficient Roll-on Transfer Technique for Well-Aligned Organic Nanofibers

Tavares, L., Kjelstrup-Hansen, J. & Rubahn, H.-G., 2011, In: Small. 7, 17, p. 2460-2463

Organic nanofiber-loaded surface plasmon-polariton waveguides

Radko, I., Fiutowski, J., Tavares, L., Rubahn, H.-G. & Bozhevolnyi, S. I., 2011, In: Optics Express. 19, 16, p. 15155-15161

Organic nanofibers integrated by transfer technique in field-effect transistor devices

Tavares, L., Kjelstrup-Hansen, J., Thilsing-Hansen, K. & Rubahn, H.-G., 2011, In: Nanoscale Research Letters. 6, 319, 8 p.

Integration of organic nanofibers as active components into electronic devices

Kjelstrup-Hansen, J., Tavares, L., Oliveira Hansen, R. M. D., Thilsing-Hansen, K. & Rubahn, H.-G., 29. Nov 2010.

Reduced bleaching in organic nanofibers by bilayer polymer/oxide coating

Tavares, L., Kjelstrup-Hansen, J., Rubahn, H.-G. & Sturm, H., Sept 2010.

Comparison between p6P thin films and nanofibers on transistor platforms

Tavares, L., Kjelstrup-Hansen, J., Thilsing-Hansen, K. & Rubahn, H.-G., Aug 2010.

Electroluminescence and field-effect transistor characteristics for transferred organic nanofibers

Tavares, L., Kjelstrup-Hansen, J., Liu, X. & Rubahn, H.-G., 2010.

Reduced bleaching in organic nanofibers by bilayer polymer/oxide coating

Tavares, L., Kjelstrup-Hansen, J., Rubahn, H.-G. & Sturm, H., 2010, In: Journal of Applied Physics. 107, 10, p. 103521-1-6 p.

Reducing bleaching effects in organic nanofibers by coating

Tavares, L., Kjelstrup-Hansen, J., Rubahn, H.-G. & Sturm, H., Sept 2009.

Activities

4th PCNS Passive Components Networking Symposium

Tavares, L. (Participant)

11. Sept 2023 → 14. Sept 2023

4th spring PhD workshop SDU-OU-JKU, 'Organic materials for flexible devices'

Tavares, L. (Speaker)

19. Apr 2010 → 20. Apr 2010

5th European Conference Hydrogen & P2X 2024

Tavares, L. (Guest lecturer)
19. Jun 2024 → 20. Jun 2024

Baltic Conference Series 2022

Tavares, L. (Participant)
15. Aug 2022 → 17. Aug 2022

Danish Battery Summit 2023

Tavares, L. (Participant)
2. Mar 2023

ECPE Online Workshop

Tavares, L. (Participant)
20. Apr 2021 → 21. Apr 2021

Effect of ion beam irradiation on pure polymer and hybrid polymer/inorganic nanocomposite dielectric for improved capacitor properties.

Tavares, L. (Speaker), Neupane, S. (Co-author), Chiriaev, S. (Co-author), Henriksen Gornall, M. (Co-author), Greenbank, W. (Co-author) & Ebel, T. (Co-author)
12. Jun 2024 → 14. Jun 2024

Efficient Exciton Diffusion and Resonance-Energy Transfer in Multi-Layered Organic Epitaxial Nanofibers

Tavares, L. (Speaker)
30. Sept 2015

EMRS Spring Meeting 2013

Tavares, L. (Speaker)
27. May 2013 → 31. May 2013

EMRS Spring Meeting 2014

Tavares, L. (Speaker)
26. May 2014 → 30. May 2014

EMRS Spring Meeting 2011

Tavares, L. (Participant)
9. May 2011 → 13. May 2011

Enhanced Heat Dissipation Property for Metallized Polypropylene Film Capacitors

Gkionis-Konstantatos, O. (Author), Greenbank, W. (Co-author), Neupane, S. (Co-author), Ebel, T. (Co-author) & Tavares, L. (Co-author)
8. May 2023 → 10. May 2023

Layer-by-layer fabrication – a platform for nanocomposite dielectric research and the future of capacitor fabrication

Greenbank, W. (Speaker), Gackowski, B. (Co-author), Neupane, S. (Co-author), Tavares, L. (Co-author) & Ebel, T. (Co-author)
3. Jul 2023

Layer-by-layer fabrication of polypropylene-based nanocomposites for capacitor dielectric applications

Greenbank, W. (Speaker), Neupane, S. (Co-author), Gackowski, B. (Co-author), Tavares, L. (Co-author) & Ebel, T. (Co-author)
9. May 2023

Layer-by-layer printing: how we fabricate the next generation of nanocomposite capacitors for more efficient power electronics

Greenbank, W. (Speaker), Tavares, L. (Co-author), Ebel, T. (Co-author), Neupane, S. (Co-author) & Gackowski, B. (Co-author)

14. Sept 2023

Materials Research Society Fall Meeting & Exhibit

Tavares, L. (Speaker)

1. Dec 2013 → 6. Dec 2013

MRS Spring Meeting 2011

Tavares, L. (Speaker)

25. Apr 2011 → 30. Apr 2011

Multilayer Strategy for Metallized Polymer Film Capacitors

Gkionis-Konstantatos, O. (Speaker), Greenbank, W. (Co-author), Neupane, S. (Co-author), Ebel, T. (Co-author) & Tavares, L. (Co-author)

3. Jul 2023 → 5. Jul 2023

Multilayer Strategy for Metallized Polypropylene Thin-Film Capacitors

Gkionis-Konstantatos, O. (Speaker), Greenbank, W. (Co-author), Neupane, S. (Co-author), Ebel, T. (Co-author) & Tavares, L. (Co-author)

18. Sept 2023 → 21. Sept 2023

New Strategies for Improving Dielectric Materials of Metallized Film Capacitors

Tavares, L. (Speaker), Neupane, S. (Co-author), Gkionis-Konstantatos, O. (Co-author), Chiriaev, S. (Co-author), Greenbank, W. (Co-author) & Ebel, T. (Co-author)

22. Nov 2023 → 23. Nov 2023

PCAM Workshop in Cracow 2017

Tavares, L. (Participant)

18. May 2017 → 19. May 2017

Smart Ceramics Conference

Tavares, L. (Participant)

14. Feb 2023

Teaching portfolio

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Pedagogical view: Educational practice - Basis / values

Most of my teaching involves instructing graduate and undergraduate students in the fields of electronics and mechatronics. The first semester courses are especially challenging due to the large number of students with different backgrounds. I have encountered in the same class, students with only very basic knowledge of physics, while other students have a university degree. The standard theoretical teaching in engineering often prepares the students to apply equations to solve standard textbook problems, however, it does not provide them the fundamental understanding of the physics of the equations. Therefore, most students have problems when faced with “non-standard” problems, since they do not see that a certain equation would also apply in such situations, i.e. they are not able to generalize from the equations.

When I work with the theoretical aspects, I strive to teach the students not only how to solve standard textbook problems, but also to achieve a more fundamental understanding of the physics of the problem. In other words, I aim to evolve the students' learning from surface to deep learning using approaches such as practice learning and constructivism. The practice learning method for teaching the theoretical aspects provides learning through lecturing, discussions, and demonstrations, while constructivism is an approach to learning which holds that people actively construct or make their own knowledge. In my lectures, the practice learning is also based on the use of e-learning techniques e.g. Poll Everywhere, while constructivism is implemented using hands-on experiments.

I believe that the student's difficulties in understanding the physics of equations rise from the fact that they do not see the application/need of this outside the classroom. Therefore, the hands-on activities enable the students to construct their own understanding of the subject and visualize the applicability of the theory, while using different e-learning techniques to constantly activate the students during the theoretical lectures. In addition, I also use e-learning tools to follow the students' development during the lectures.

I have compared the students' performance during a semester when hands-on and e-learning activities were used with a previous semester when these activities were not applied. When using these learning techniques, I notice an increase in students' participation and interest in the lectures. Also, the examinations show that the use of hands-on and e-learning techniques resulted in a significant improvement in the students' performance. Therefore, in the future, I will continue using such techniques and work to implement more of these activities in my lectures.

I believe that this combination of techniques enables me to teach students coming with different backgrounds in an optimum manner, filling the gaps in the understanding for the more advanced students and, simultaneously, bringing the students that lacked the basic physics up to the required level. I think that the use of e-learning techniques increase students' participation and focus in class by supporting discussions and sharing of experiences between peers and/or me, develop a critical analysis of the hands-on experiment, and therefore stimulate the students to reflect on the fundamental meaning of the equations.

Teaching experience

2015	Course: Statics, Materials and Mathematics: MECH1 - Materials. Programme: Bachelor of Engineering in Mechatronic. ECTS: 5
2015	Course: Discover the Mechatronic Development Process: SPRO1M . Programme: Bachelor of Engineering in Mechatronic. ECTS: 10
2016	Course: Nanoproject. Programme: M.Sc. in Mechatronic. ECTS: 5
2016	Course: Statics, Materials and Mathematics: MECH1 - Materials. Programme: Bachelor of Engineering in Mechatronic. ECTS: 5
2016	Course: Discover the Mechatronic Development Process: SPRO1M . Programme: Bachelor of Engineering in Mechatronic. ECTS: 10
2017	Course: Nanoproject. Programme: M.Sc. in Mechatronic. ECTS: 5
2018	Course: Statics, Materials and Mathematics: MECH1 - Materials. Programme: Bachelor of Engineering in Mechatronic. ECTS: 5
2018	Course: Discover the Mechatronic Development Process: SPRO1M . Programme: Bachelor of Engineering in Mechatronic. ECTS: 10
2018	Course: Physics and Mathematics: ENPHYS. Programme: Bachelor of Engineering in Electronics. ECTS: 5
2020	Course: Discover the Mechatronic Development Process: SPRO1M . Programme: Bachelor of Engineering in Mechatronic. ECTS: 10
2020	Course: Physics and Mathematics. Programme: Bachelor of Engineering in Electronics. ECTS: 5
2021	Course: Physics and Mathematics: ENPHYS. Programme: Bachelor of Engineering in Electronics. ECTS: 5
2021	Course: Discover the Mechatronic Development Process: SPRO1M . Programme: Bachelor of Engineering in Mechatronic. ECTS: 10
2021	Course: Sensors and Actuators. Programme: Bachelor of Engineering in Mechatronic. ECTS: 5
2022	Course: Building Mechatronic Products that can move: Electronics. Programme: Bachelor of Engineering in Mechatronics. ECTS: 5
2022	Course: Electronics 1. Programme: Electronics Engineering. ECTS: 10

Formal pedagogical training

2015	Lecturer Training Programme by SDU Universitetspædagogik og e-læring
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Other activities related to teaching and teaching development

2016	Course: Public speaking and presentations skills by SDU Universitetspædagogik og e-læring
2016	Courses: Questioning - how it can support learning, teaching and assessment by SDU Universitetspædagogik og e-læring
2017	Course: Setting up your course in BB by SDU Universitetspædagogik og e-læring
2019	Course: Supervision - roles and relations by SDU Universitetspædagogik og e-læring