

1. Personal information

Name: Asal Kiazadeh

Civil status: Married

Number of children: two

Nationality: Portuguese

Languages: Persian, English, Arabic, Portuguese, German (basic)

Mobile: +351 919580213 Email: a.kiazaden@fct.unl.pt

ORCID: [0000-0002-8422-5762](https://orcid.org/0000-0002-8422-5762)

2. Academic background

PhD degree

Classification: Very good with highest distinction

Universidade do Algarve, Faculdade de Ciências e Tecnologia and Philips Research Labs in Eindhoven

Thesis: Fabrication and characterization of memory devices based on nanoparticles

Scientific domain: Electronics and Optoelectronics

(Jan. 2010 - Dec. 2013)

Master degree

Classification: 18.25/20, thesis score: 19.75/20

Iran University of Science and Technology (IUST) in Tehran

Thesis: Electrical characterization of metal nanoparticles

Scientific domain: Engineering (Nanoelectronics)

(Sep. 2006 - Mar. 2009)

3. Employment history

2015-present:

Lecturer, by introducing new lecture: Electronic Information Storage (Gravação Eletrónica de Informação) for 4th and 5th year master students in Micro- and Nanotechnology, Physics and Electronics.

2014-present:

Postdoctoral scholarship granted by Fundação para a Ciência e a Tecnologia
Project: Study of oxide memristors and amorphous oxide thin film transistors instability

Place: CENIMAT/i3N, FCT – Universidade Nova de Lisboa

2010-2013: PhD student working on memristor devices, University of Algarve, Portugal, Philips Research Labs Eindhoven.

2007-2009:

Engineering undergraduate program tutor, Payam Noor university, Tehran, Iran

4. scientific production (books, book chapters, journal articles)

Expert scientific domain:

1. Fabrication, characterization and modelling of resistive switching memory and memristor devices based on bio-compatible polymers and oxide materials on paper and flexible substrates for system on panel and IoT applications (health care wearables).
2. Study of electrical characterization and instability issues of physical and chemical processed flexible oxide-based thin film transistors from individual device to different circuits.

Book:

Kiazadeh, A. et al. Collection of tests in electronics for first year students of science and technology university. 2009 - Tehran: Adna Publications. National library no.106213. Language of book: Farsi (Persian). Bestselling national educational book in 2014

Book chapters:

1. Organic memory (molecular, hybrid and polymer memory), Book: Advances in non-volatile memory and storage technology, Elsevier, 2014

2. Flexible and transparent RRAM devices for System-On-Panel (SOP) application, Book: Advances in non-volatile memory and storage technology, 2nd Edition, edited by Prof. Yoshio Nishi, Stanford University, Elsevier in June 2019

Articles in international journals:

1. Deuermeier, J., **Kiazadeh, A***, Klein, A., R., Martins, R. & Fortunato, E. (2019), *Multi-level cell properties of a bilayer Cu₂O/Al₂O₃ resistive switching device*. *Nanomaterials*, 9(2), 289.
[DOI: 10.3390/nano9020289](https://doi.org/10.3390/nano9020289)
2. Faraday Discussions:
Electrochemical metallization ReRAMs (ECM) - Experiments and modelling: general discussion, 2019, [DOI: 10.1039/C8FD90059K](https://doi.org/10.1039/C8FD90059K)
Synaptic and neuromorphic function: general discussion Faraday Discussions, 2019, [DOI: 10.1039/C8FD90065E](https://doi.org/10.1039/C8FD90065E)
Valence change ReRAMs (VCM) - Experiments and modelling: general discussion Faraday Discussions, 2019, [DOI: 10.1039/C8FD90057D](https://doi.org/10.1039/C8FD90057D)
3. Carlos, E., **Kiazadeh, A***, Deuermeier, J., Branquinho, R., Martins, R. & Fortunato, E. (2018) *Critical role of a double-layer configuration in solution-based unipolar resistive switching memories*. *Nanotechnology* 29, 345206. <http://doi.org/10.1088/1361-6528/aac9fb>
4. Carlos, E., Branquinho, R., **Kiazadeh, A.**, Martins, J., Barquinha, P., Martins, R. & Fortunato, E. (2017) *Boosting Electrical Performance of High-κ Nanomultilayer Dielectrics and Electronic Devices by Combining Solution Combustion Synthesis and UV Irradiation*. *ACS Applied Materials & Interfaces* 9, 40428–40437.
<http://doi.org/10.1021/acsami.7b11752>
5. Goswami, S., Nandy, S., Banerjee, A. N., **Kiazadeh, A.**, Dillip, G. R., Pinto, J. V., Joo, S. W., Martins, R. & Fortunato, E. (2017) *'Electro-Typing' on a Carbon-Nanoparticles-Filled Polymeric Film using Conducting Atomic Force Microscopy*. *Advanced Materials* 29, 1703079. <http://doi.org/10.1002/adma.201703079>
6. Rosa, J., **Kiazadeh, A***, Santos, L., Deuermeier, J., Martins, R., Gomes, H. L. & Fortunato, E. (2017) *Memristors Using Solution-Based IGZO Nanoparticles*. *ACS Omega* 2, 8366–8372.
<http://doi.org/10.1021/acsomega.7b01167>

7. Salgueiro, D., **Kiazadeh, A***, Branquinho, R., Santos, L., Barquinha, P., Martins, R. & Fortunato, E. (2017) *Solution based zinc tin oxide TFTs: the dual role of the organic solvent*. Journal of Physics D: Applied Physics 50, 65106. <http://doi.org/10.1088/1361-6463/50/6/065106>
8. Martins, J., Bahubalindrani, P., Rovisco, A., **Kiazadeh, A.**, Martins, R., Fortunato, E. & Barquinha, P. (2017) *Bias Stress and Temperature Impact on InGaZnO TFTs and Circuits*. Materials 10, 680. <http://doi.org/10.3390/ma10060680>
9. Carlos, E., Branquinho, R., **Kiazadeh, A.**, Barquinha, P., Martins, R. & Fortunato, E. (2016) *UV-Mediated Photochemical Treatment for Low-Temperature Oxide-Based Thin-Film Transistors*. ACS Applied Materials & Interfaces 8, 31100–31108. <http://doi.org/10.1021/acsami.6b06321>
10. Deuermeier, J., Bayer, T. J. M., Yanagi, H., **Kiazadeh, A.**, Martins, R., Klein, A. & Fortunato, E. (2016) *Substrate reactivity as the origin of Fermi level pinning at the Cu₂O/ALD-Al₂O₃ interface*. Materials Research Express 3, 46404. <http://doi.org/10.1088/2053-1591/3/4/046404>
11. Bahubalindrani, P. G., **Kiazadeh, A***, Sacchetti, A., Martins, J., Rovisco, A., Tavares, V. G., Martins, R., Fortunato, E. & Barquinha, P. (2016) *Influence of Channel Length Scaling on InGaZnO TFTs Characteristics: Unity Current-Gain Cutoff Frequency, Intrinsic Voltage-Gain, and On-Resistance*. Journal of Display Technology 12, 515–518. <http://doi.org/10.1109/JDT.2016.2550610>
12. **Kiazadeh, A.**, Gomes, H. L., Barquinha, P., Martins, J., Rovisco, A., Pinto, J. V., Martins, R. & Fortunato, E. (2016) *Improving positive and negative bias illumination stress stability in parylene passivated IGZO transistors*. Applied Physics Letters 109, 51606. <http://doi.org/10.1063/1.4960200>
13. Branquinho, R., Salgueiro, D., Santa, A., **Kiazadeh, A.**, Barquinha, P., Pereira, L., Martins, R. & Fortunato, E. (2015) *Towards environmental friendly solution-based ZTO/AlO_x TFTs*. Semiconductor Science and Technology 30, 24007. <http://doi.org/10.1088/0268-1242/30/2/024007>
14. **Kiazadeh, A.**, Salgueiro, D., Branquinho, R., Pinto, J., Gomes, H. L., Barquinha, P., Martins, R. & Fortunato, E. (2015) *Operational stability of solution based zinc tin oxide/SiO₂ thin film transistors under gate bias stress*. APL Materials 3, 62804. <http://doi.org/10.1063/1.4919057>
15. Rocha, P. R. F., **Kiazadeh, A.**, De Leeuw, D. M., Meskers, S. C. J.,

- Verbakel, F., Taylor, D. M. & Gomes, H. L. (2013) *The role of internal structure in the anomalous switching dynamics of metal-oxide/polymer resistive random access memories*. Journal of Applied Physics 113, 134504. <http://doi.org/10.1063/1.4799093>
16. Rocha, P. R. F., Gomes, H. L., Vandamme, L. K. J., Chen, Q., **Kiazadeh, A.**, de Leeuw, D. M. & Meskers, S. C. J. (2012) *Low-Frequency Diffusion Noise in Resistive-Switching Memories Based on Metal–Oxide Polymer Structure*. IEEE Transactions on Electron Devices 59, 2483–2487. <http://doi.org/10.1109/TED.2012.2204059>
 17. **Kiazadeh, A.**, Gomes, H. L., da Costa, A. M. R., Moreira, J. A., de Leeuw, D. M. & Meskers, S. C. J. (2012) *Intrinsic and extrinsic resistive switching in a planar diode based on silver oxide nanoparticles*. Thin Solid Films 522, 407–411. <http://doi.org/10.1016/J.TSF.2012.08.041>
 18. Chen, Q., Bory, B. F., **Kiazadeh, A.**, Rocha, P. R. F., Gomes, H. L., Verbakel, F., De Leeuw, D. M. & Meskers, S. C. J. (2011) *Opto-electronic characterization of electron traps upon forming polymer oxide memory diodes*. Applied Physics Letters 99, 83305. <http://doi.org/10.1063/1.3628301>
 19. **Kiazadeh, A.**, Gomes, H. L., da Costa, A. M. R., Moreira, J. A., de Leeuw, D. M. & Meskers, S. C. J. (2011) *Non-volatile memory device using a polymer modified nanocrystal*. Materials Science and Engineering: B 176, 1552–1555. <http://doi.org/10.1016/J.MSEB.2011.01.021>
 20. Gomes, H. L., Rocha, P. R. F., **Kiazadeh, A.**, De Leeuw, D. M. & Meskers, S. C. J. (2011) *Anomalous temperature dependence of the current in a metal-oxide-polymer resistive switching diode*. Journal of Physics D: Applied Physics 44, 25103. <http://doi.org/10.1088/0022-3727/44/2/025103>

Conference papers:

1. Rocha, P. R. F., **Kiazadeh, A.**, Chen, Q. & Gomes, H. L. *Dynamic behavior of resistive random access memories (RRAMs) based on plastic semiconductor*. (Springer, Berlin, Heidelberg, 2012). in 535–540, DoCEIS. http://doi.org/10.1007/978-3-642-28255-3_59

2. **Kiazadeh, A.**, Rocha, P. R. F., Chen, Q. & Gomes, H. L. *New electronic memory device concepts based on metal oxide-polymer nanostructures planer diodes*. (Springer, Berlin, Heidelberg, 2012). in 521–526, DoCEIS. http://doi.org/10.1007/978-3-642-28255-3_57
3. Chen, Q., Gomes, H. L., **Kiazadeh, A.**, Rocha, P. R. F., De Leeuw, D. M. & Meskers, S. C. J. *Electroforming process in metal-oxide-polymer resistive switching memories*. (Springer, Berlin, Heidelberg, 2012). in 527–534, DoCEIS. http://doi.org/10.1007/978-3-642-28255-3_58
4. Rocha, P. F., Gomes, H. L., **Kiazadeh, A.**, Chen, Q., de Leeuw, D. M. & Meskers, S. C. J. *Switching speed in Resistive Random Access Memories (RRAMs) based on plastic semiconductor*. MRS Proceedings 1337, mrss11-1337-q10-06 (2011), MRS, San Francisco, USA. <http://doi.org/10.1557/opl.2011.859>
5. **Kiazadeh, A.**, Rocha, P. R., Chen, Q. & Gomes, H. L. *Resistive random access memories (RRAMs) based on metal nanoparticles*. (Springer, Berlin, Heidelberg, 2011). in 591–595, DoCEIS. http://doi.org/10.1007/978-3-642-19170-1_65
6. **Kiazadeh, A.**, Gomes, H. L., Da Costa, A. R., Rocha, P., Chen, Q., Moreira, J. A., De Leeuw, D. M. & Meskers, S. C. J. *Planar Non-Volatile Memory based on Metal Nanoparticles*. MRS Proceedings 1337, mrss11-1337-q10-05.(2011), MRS, San Francisco, USA. <http://doi.org/10.1557/opl.2011.1126>

* corresponding autor

5. Organizing and leading scientific teams, research projects and supervision of master, doctoral and postdoctoral students

Scientific projects:

Principal investigator (PI) of the project **NeurOxide**: "Integration of oxide thin film transistors and memristors in neuromorphic networks", financed by national funds through the Portuguese Foundation for Science and Technology.

Starting date: October 2018

Under the financial coverage of the project, a postdoctoral researcher as an expertize in circuit design (based on new device concepts memristors) will be contracted for three years. Moreover, an engineer in Micro- and Nanoelectronics or Material Science with cleanroom skills will be contracted working in CENIMAT.

Participation in other projects as PhD-researcher member:

1. Collaboration in current projects in CENIMAT/I3N - Universidade Nova de Lisboa as project member:
 - a) European Commission 7th Framework Program under grant agreement ICT-2013-10-611070 (i-FLEXIS project)
 - b) H2020 program under ICT-03-2014-644631 (ROLL-OUT project)
 - c) UID/CTM/50025/2013 and EXCL/CTM-NAN/0201/2012 FEDER funds through the COMPETE 2020 Program
2. Collaboration in FLEXNET project as member: Electrical characterization of TFTs, 2012, Algarve University

Supervision and co-supervision of master student theses:

1. Conductive bridging RAM devices inspired on solid-state biopolymer electrolytes - Pedro Nuno de Jesus Francisco Freitas (Micro and Nanotechnology, 2015)
2. Nanoparticles as a charge trapping layer in Metal-Insulator-Semiconductor structures - Rui Filipe Raposo Carreiras (Micro and Nanotechnology, 2015)
3. Solution-based IGZO nanoparticles memristor - José Manuel Atalaia Rosa (Micro and Nanotechnology, 2016)
4. Co-supervision of circuit tests for the thesis Advanced Electrical Characterization of Oxide TFTs - Duarte Miguel Ribeiro Guerra (Electronics and Computer, 2016)
5. Resistance Switching Memory Devices based on Zinc Oxide Nanoparticles on Paper Substrates - Miguel Alexandre Martins Franco (Micro and Nanotechnology, 2017)

6. Memristor based on amorphous oxides - Nuno Casa Branca (Micro and Nanotechnology, 2018)

Co-supervision of PhD projects:

1. TCAD simulation to physical analysis of thin film transistors and memristor - Jorge Martins, FCT granted PhD student in 2016
2. Development of printed biocompatible synaptic memory device- Miguel Franco, FCT granted PhD student in 2019
3. Strong collaboration on PhD topic based on solution-based dielectrics for wide application printable electronics - Emanuel Carlos, FCT granted PhD student in 2016
4. Strong collaboration on PhD topic based on solution processed ZTO electronic devices: TFTs, diodes, memristors - Daniela Salgueiro, FCT granted PhD student in 2015

Member in organizing committees:

1. Member of the Program Committee of Advanced Doctoral Conference on computing, Electrical and Industrial Systems (DoCEIS)
Years: 2016-present
2. Member of the Organizing Committee of one day meeting - Jornadas do CENIMAT 2016

6. Teaching activities (development of new course, participation in bodies of pedagogical implementation of projects with impact on teaching and learning)

1. Preparation of all the slides and necessary documents of the course of Gravação Eletrónica de Informação for 14 classes of 2h/week, design and development of all lab tasks for students with questionnaires for practical classes 3h/week. (Please see the file “Relatório sobre Unidade Curricular” and the entry in CLIP). Year: 2015-present.
2. A lecture note is introduced for the academic year of 2018-2019 for the course of Gravação Eletrónica de Informação. Some part of the lecture

note is based on my two book chapters and the other part will be a collection of knowledge and information referred to different books. (Please see the file “Relatório sobre Unidade Curricular”).

3. Developing a website concerning the work on memristors in CENIMAT/i3N:

<https://sites.fct.unl.pt/neuroxide>

The website contains some tutorial sections and electrical measurement protocols of emulating neural behaviors at synaptic levels for transistor and memristor based devices. Introduction of this new trend of technology requires some learning sessions through seminars and notes which will be announced via the website.

Title of course	Place	Years
Gravação Eletrónica de Informação- Master students	Universidade Nova de Lisboa	Since 2015 to now
Electrophysics (undergraduate program)	Payam Noor University Tehran, Iran	2006-2007 2007-2008