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CURRICULUM VITAE

A. Karatutlu, PhD in Physics

[Researchgate profile](#)

[Google scholar profile](#)

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PRIMARY AREA of RESEARCH

- **Research Area I: Development of Optical Fibers and Fiber Laser Components**
 - Fabrication of Optical Fibers using the Modified Chemical Vapor Deposition System (Engineered the First Nationally Recognized Active Fibers Compatible to Industry Standards together with the Fabrication of Photonic Crystal Fibers for the first time in Turkey Via TÜBİTAK Project No. 113A055, **TRL Level 9**) (Trained and Certified by Optacore® (now part of Lumentum®))
 - Surface Modified and Functionized Optical Fibers for High-Power Fiber Laser Components (During the Post-doctoral Works at Bilkent University, **TRL Level 9**)
 - Refractory Thin Films Coated Optical Fibers using Atomic Layer Deposition for High-Power Fiber Laser Components (During the Post-doctoral Works at Bilkent University, **TRL Level 5**)

- **Research Area II: Liquid Phase Synthesis of Colloidal Nanoparticles for Photonics and Medical Applications**
 - New Generations of Nanocomposites for the Fabrication: Nanoparticle Embedded Nanotubes via Catalytic Chemical Vapor Deposition System (*During the Post-Doctoral Works at Queen Mary, University of London & Bilkent University, TRL Level 2*)
 - Disordered and Colloidal Nanoparticle Systems for Medical Applications (*During the PhD Study at Queen Mary, University of London (partly supported by UK BBSRC grant BB/J001473/1) & Post-doctoral works at Bilkent University, TRL Level 3*)

Education & Research

- Nov 2010 – May 2014* **Queen Mary, University of London**
PhD, Physics
London, United Kingdom
- Sep 2008 – Aug 2010* **T.C. Fatih University**
MSc, Physics
İstanbul, Turkey
- Sep 2003 – Aug 2008* **University of Gaziantep**
BSc, Physics Engineering
Gaziantep, Turkey

Personal information

<i>Date of Birth and place</i>	27.05.1985/Kahramanmaras, Turkey
<i>Driving licence</i>	Type B
<i>Marriage Status</i>	Married and have one daughter
<i>Smoking</i>	No

Post-doctoral Research, Teaching and Administration Works

- July 2017-Current* **Post-Doctoral Research Scientist at Ortaç Research Group,**
(*Until 31.03.2020*) National Nanotechnology Research Centre and UNAM-Institute of Materials Science and Nanotechnology at Bilkent University, Ankara, Turkey
- August 2016- July 2017* Project Consultant at MEL-EN Proje ve Danışmanlık, Bursa Branch, Turkey
- Sep 2014 – August,2016* Assistant Professor,
Electrical and Electronics Engineering (EEE), Bursa Orhangazi University (BOU), Turkey
- Sep 2014 – August,2016* International Relations Coordinator at BOU, Turkey
- Sep 2014 – August,2016* Deputy-manager of Science and Technology Institute at BOU, Turkey
- Sep 2014 – August,2016* Head of Internship Committee at EEE, BOU , Turkey
- Sep 2014 – August,2016* Coordinator of Erasmus mobility exchange programme in the institute at BOU, Turkey

Awards & Grants

- July, 2017* Post-Doctoral Research Scientist at National Nanotechnology Research Centre and UNAM-Institute of Materials Science and Nanotechnology at Bilkent University, Ankara, Turkey
- September, 2014* Lecturership: Department of Electrical and Electronics Engineering, Bursa Orhangazi University (Bursa Technical University), Bursa, Turkey

<i>Sep 2010</i>	Scholarship: Queen Mary College PhD scholarship, London, the UK
<i>July 2011, March 2012, and July, 2013</i>	Queen Mary College Research Fund (3 times awarded), London, the UK
<i>August, 2010</i>	Honour graduate and best GPA in M.Sc. programme in Physics at Fatih University, Istanbul, Turkey
<i>and June, 2008</i>	Honour graduate in B.Sc. studies in Physics Engineering at Gaziantep University, Turkey
<i>September, 2008</i>	Scholarship: Fatih University (Istanbul University-Cerrahpaşa) M.Sc. Scholarship in Istanbul, Turkey

Skills & Activities

Skills (based on recommendations in Research Gate) Wet Chemistry, Nanomaterials Synthesis, Raman Spectroscopy, EXAFS, Optics, Quantum Dots, Material Characterization, Nanostructures, Nanocrystals, Annealing, TEM Image Analysis, Sol-Gel Synthesis, Chemical Vapor Deposition, Physical Characterization, EDX, Powder X-ray Diffraction, X-Ray Absorption Spectroscopy, Photoluminescence Spectroscopy (PL), Confocal Laser Scanning Microscopy, Nanotoxicity, Laser Ablation, UV-Visible Spectroscopy, Nanophotonics, Characterization of Nanoparticles, Nanostructured Materials, Materials Science, Nanoelectronics, Luminescence, X-Ray, Materials, Nanomaterials, Thin Films and Nanotechnology, Solid State Physics, X-ray Diffraction, Super Resolution Microscopy, Colloid Chemistry, Fluorescence, Single Molecules, Live Cell Imaging, XANES, Fiber Laser Physics, Preform production and fiber drawing.

Languages English (Working Proficiency), Turkish (Native), German (Beginner)

Scientific Memberships Royal Society of Chemistry
Optical Society of America
The International X-ray Absorption Society Portal

Other Interests Innovation

Publication Highlights (17 journal papers, 10 conference proceedings, 1 patent application, 3 book chapters)

Journal Publications

[17] İ. Seker, **A. Karatutlu**, K Golcuk, M. Karakiz, B. Ortaç, A Systematic Study on Au-capped Si Nanowhiskers for Size-Dependent Improved Biosensing Applications *Plasmonics*, Vol. 15 (2020) Doi: [10.1007/s11468-020-01195-7](https://doi.org/10.1007/s11468-020-01195-7)

[16] **A. Karatutlu**, Atomic layer deposition of zirconium oxide thin film on an optical fiber for cladding light strippers, *Turk J Phys*, Doi:[10.3906/fz-1908-6](https://doi.org/10.3906/fz-1908-6)

- [15] E. Y. Yıldırım, **A. Karatutlu**, E. T. Balk, Y. Midilli, B. Ortaç Combined method for the fabrication of high-power cladding light stripper using buffered oxide etchant, *Applied Optics*, 2019, 2155-3165, 58, 25, 361916 Doi: [10.1364/AO.58.006926](https://doi.org/10.1364/AO.58.006926)
- [14] C. Candan, A. A. Seymen, **A. Karatutlu**, M. Tiken, Y. Midilli, E. Orhan, H. Berberoğlu, B. Ortaç Performance Evaluation of Fiber-based Ballistic Composites against Laser Threats, *Optics and Lasers in Engineering* Volume 121, October 2019, Pages 54-60 Doi: [10.1016/j.optlaseng.2019.03.016](https://doi.org/10.1016/j.optlaseng.2019.03.016)
- [13] **A. Karatutlu**, F. S. Boi, R. Wilson, O. Ersoy, B. Ortaç, A. Sapelkin A Bean-like Formation of Nanoparticles inside the Carbon Nanotubes: Colloidal Germanium Nanoparticles Implanted throughout Iron-filled CNTs *Crystal Research & Technology* 2018-10-22
Doi: [10.1002/crat.201800123](https://doi.org/10.1002/crat.201800123)
- [12] A Karatutlu, B Patil, ..., A. Sapelkin Structural, Optical, Electrical and Electrocatalytic Activity Properties Of Luminescent Organic Carbon Quantum Dots 3/17 2018 *Chemistry Select* Doi: [10.1002/slct.201800714](https://doi.org/10.1002/slct.201800714)
- [11] Şeker, İ., **Karatutlu, A.** & İstengir, S. Preferential MBE Growth and Characterization of SiGe Nanoislands on Depth-Selective Si Pits Etched by Ar + Plasma. *Phys. status solidi – Rapid Res. Lett.* 1700424 (2018). Doi:[10.1002/pssr.201700424](https://doi.org/10.1002/pssr.201700424)
- [10] Şeker, İ., **Karatutlu, A.**, Gürbüz, O. et al. *Appl. Phys. A* (2018) 124: 47. Doi: [10.1007/s00339-017-1448-6](https://doi.org/10.1007/s00339-017-1448-6)
- [9] **Karatutlu A**, Istengir S, Cosgun S, Seker I, Unal B. Decalin-assisted light emitting porous Si formation and its optical, surface and morphological properties. *Appl Surf Sci* 2017;422:498–503.
Doi:[10.1016/j.apsusc.2017.06.057](https://doi.org/10.1016/j.apsusc.2017.06.057).
- [8] M. Song, **A. Karatutlu**, I. Ali, O. Ersoy, Y. Zhou, Y. Yang, Y. Zhang, W. R. Little, A. P. Wheeler, and A. V. Sapelkin, “Spectroscopic super-resolution fluorescence cell imaging using ultra-small Ge quantum dots,” *Opt. Express*, vol. 25, no. 4, p. 4240, Feb. 2017. Doi: [10.1364/OE.25.004240](https://doi.org/10.1364/OE.25.004240)
- [7] Zhang, Y., Ersoy, O., **Karatutlu, A.** & Sapelkin, A. (2016) Local structure of amorphous and nanoscale systems by numerical XANES calculations. *Journal of Non-Crystalline Solids*. [Online] 1–6.
Available from: Doi:[10.1016/j.jnoncrysol.2016.07.001](https://doi.org/10.1016/j.jnoncrysol.2016.07.001).
- [6] **Ali Karatutlu**, Osman Ersoy, William R. Little, Yuanpeng Zhang, Isa Seker and Andrei Sapelkin: ; *Laser-induced particle size tunes and structural transformations in germanium nanoparticles prepared by stain etching and colloidal synthesis route. Journal of Applied Physics* 2015 118 (24), 244303 Doi:[10.1063/1.4939066](https://doi.org/10.1063/1.4939066)
- [5] Yuanpeng Zhang, Osman Ersoy, **Ali Karatutlu**, Andrei Sapelkin: *The local structure of Ge quantum dots determined by combined numerical analysis of extended x-ray absorption fine structure and x-ray absorption near-edge structure data. Journal of Synchrotron Radiation* 10/2015; 23 (1) Doi: [10.1107/S160057751501913X](https://doi.org/10.1107/S160057751501913X)
- [4] Niccolo R. C. Corsini, Yuanpeng Zhang, William R Little, **Ali Karatutlu**, Osman Ersoy, Peter D Haynes, Carla Molteni, Nicholas D M Hine, Jesus Gonzalez, Ignacio Hernandez, Fernando Rodriguez, Vadim V Brazhkin, Andrei V Sapelkin: *Pressure-Induced Amorphization and a New High Density Amorphous Metallic Phase in Matrix-Free Ge Nanoparticles. Nano Letters* 10/2015; Doi:[10.1021/acs.nanolett.5b02627](https://doi.org/10.1021/acs.nanolett.5b02627)
- [3] **Ali Karatutlu**, Mingying Song, Ann P. Wheeler, Osman Ersoy, William R. Little, Yuanpeng Zhang, Pascal Puech, Filippo S. Boi, Zofia Luklinska, Andrei V. Sapelkin: *Synthesis and structure of free-*

standing Germanium quantum dots and their application in live cell imaging. **RSC Advances** 02/2015; 5(26-26):20566-20573. DOI:[10.1039/c5ra01529d](https://doi.org/10.1039/c5ra01529d)

[2] Yuanpeng Zhang, **Ali Karatutlu**, Osman Ersoy, William Little, Giannantonio Cibin, Andy Dent, Andrei Sapelkin: *Structure and effects of annealing in colloidal matrix-free Ge quantum dots*. **Journal of Synchrotron Radiation** 01/2015; 22(1-1):105-112. Doi:[10.1107/S1600577514022486](https://doi.org/10.1107/S1600577514022486)

[1] Little, W., **Karatutlu, A.**, Bolmatov, D., Trachenko, K., Sapelkin, A. V, Cibin, G., Taylor, R., Mosselmans, F., Dent, A.J., Mountjoy, G., **2014**. Structural origin of light emission in germanium quantum dots. **Sci. Rep.** 4, 7372. Doi: [10.1038/srep07372](https://doi.org/10.1038/srep07372)

Conference Proceedings

- E. YAPAR YILDIRIM, A. KARATUTLU, E. T. BALK, Y. MİDİLLİ & B. ORTAÇ, A Combinatorial Buffered Oxide Etching Method for High-Power Cladding Light Stripper, 2019 Conference on Lasers & Electro-Optics / Europe and European Quantum Electronics Conference (CLEO® / Europe-EQEC), 23 - 27 June 2019. Oral Presentation (Abstract)
- A. KARATUTLU, E. YAPAR YILDIRIM, B. ŞİMŞEK, A. BAŞARAN, E. T. BALK, Y. MİDİLLİ & B. ORTAÇ, Yüksek Güçte Kılıf Işığı Sıyırıcılarda Mühendislik Teknikleri, Adim Fizik Günleri VII, 23 May 2018, 25 October 2018. Oral Presentation (Abstract)
- ESKİDERE ÖMER, KARATUTLU ALİ (2015). Source microphone identification using multitaper MFCC features. 2015 9th International Conference on Electrical and Electronics Engineering (ELECO), Doi: 10.1109/ELECO.2015.7394482 (Full paper)
- ESKİDERE ÖMER, KARATUTLU ALİ, ÜNAL CEVAT (2015). Detection of Parkinson's disease from vocal features using random subspace classifier ensemble. 2015 Twelve International Conference on Electronics Computer and Computation (ICECCO), Doi: 10.1109/ICECCO.2015.7416886 (Full paper)
- KARATUTLU ALİ, Ersoy Osman, Little William, Zhang Yuanpeng, Sapelkin Andrei (2015). Systematic Annealing Of Free - Standing Ge Nanoparticles in H₂/Ar (% 5/%95) Gas Medium. 6th International Conference on Nanotechnology: Fundamentals and Applications (ICNFA'15) (Full paper)
- KARATUTLU ALİ, Zhang Yuanpeng, Ersoy Osman, Sapelkin Andrei (2014). Looking into the structure of Ge nano-crystals through combined Diffraction/XAFS. Congress and General Assembly of International Union of Crystallography, 70(a1), 1533-1533., Doi: 10.1107/s2053273314084666 (Abstract)
- KARATUTLU ALİ, Song Mingying, Wheeler Ann, Ersoy Osman, Zhang Yuanpeng, Puech Pascal, Luklinska Zofia, Boi Filippo, Sapelkin Andrei (2013). Synthesis and structure of colloidal stable Germanium quantum dots and their application in live cell imaging. E-MRS Fall Meeting, 2013 (Abstract)
- Yuanpeng Zhang, KARATUTLU ALİ, Ersoy Osman, Sapelkin Andrei (2013). Looking into the structure of Ge nanocrystals through diffraction. 28th European Crystallographic Meeting, ECM 28, 69(a1), 431-431., Doi: 10.1107/s0108767313096232 (Abstract)
- KARATUTLU ALİ, Little William, Sapelkin Andrei, Dent Andrew, Mosselmans Fred, Cibin Giannantonio, Taylor Richard (2012). OD-XAS and EXAFS: Structure and Luminescence in Ge Quantum Dots. 15th International Conference on X-Ray Absorption Fine Structure (XAFS), 430, 12026, Doi: 10.1088/1742-6596/430/1/012026 (Full paper)
- KARATUTLU ALİ, Little William, Sapelkin Andrei (2011). Chemically and Physically Production of Germanium Nanoparticles. 17th International Summer School on Vacuum, Electron, and Ion Technologies (VEIT 2011) (Abstract)

Patent applications/publications

- Ali Karatutlu, Balhassn Ali et al., A device used for 3-D growing of transition metals-filled Carbon Nanotubes on the materials, US patent and tried mark office (Uspto), patent application No. 29/563,155. Date applied: 13th May, 2016

Arxiv papers

- Song, M., Karatutlu, A., Ersoy, O., Zhou, Y., Yang, Y., Zhang, Y., Little, W.R., Wheeler, A.P., Sapelkin, A. V.: Spectroscopic super-resolution fluorescence cell imaging using ultra- small Ge quantum dots. [arXiv:1503.09151](https://arxiv.org/abs/1503.09151). (2015).
- Sapelkin, A. V, Bolmatov, D., Karatutlu, A., Little, W., Trachenko, K.: Origin of Photoluminescence in Ge Quantum Dots. [arXiv:1309.3951](https://arxiv.org/abs/1309.3951). (2013).

BOOK CHAPTER (s)

[3] A. KARATUTLU, E. Yapar Yıldırım, B. Ortaç **Fundamentals of Laser-generated Nanoparticles in Liquid-phase**, KLAUS D. SATTLER (Editor) 21st Century Nanoscience – A Handbook: Low-Dimensional Materials and Morphologies (Volume Four) CRC Press, Taylor & Francis Group (accepted to be published in March 2020)

Link: <https://www.crcpress.com/21st-Century-Nanoscience-A-Handbook-Low-Dimensional-Materials-and-Morphologies/Sattler/p/book/9780815355281>

[2] **KARATUTLU, A. BARHOUM & A. SAPELKIN, Chapter 1: Liquid-phase Synthesis Of Nanoparticles And Nanostructured Materials**, A. BARHOUM & A. S. H. MAKHLOUF [Editors], Emerging Applications Of Nanoparticles And Architecture Nanostructures(1 – 20), ISBN: 978-0-323-51254-1, ABD: Elsevier, 10 May 2018,

Link: <https://www.sciencedirect.com/science/article/pii/B9780323512541000014>

[1] **KARATUTLU, A. BARHOUM & A. SAPELKIN, Chapter 20: Theories Of Nanoparticle and Nanostructure Formation In Liquid Phase**, A. S. H. MAKHLOUF & A. BARHOUM [Editors], *Emerging Applications Of Nanoparticles And Architecture Nanostructures*(597 – 618), ISBN: 978-0-323-51254-1, ABD: Elsevier, 10 May 2018

Link: <https://www.sciencedirect.com/science/article/pii/B9780323512541000208>

Ongoing Projects

- **Fabrication of polarization-maintaining optical fibers for gyroscope applications** Innovation Team, National Nanotechnology Research Centre and UNAM-Institute of Materials Science and Nanotechnology at Bilkent University, Ankara, Turkey
01/04/2020 -Current

Completed Projects

- **High Power Laser Systems** (Post-doctoral Research Scientist Grant Number: 113A055 (First Phase Completed-Tubitak 1007) National Nanotechnology Research Centre and UNAM-Institute of Materials Science and Nanotechnology at Bilkent University, Ankara, Turkey 17/07/2017 - 15/03/2020
- Structure and light emission in germanium nanoparticles (Research student, partly supported by UK BBSRC grant BB/J001473/1) CCMMP, School of Physics and Astronomy, Queen Mary, University of London 01/11/2010 - 30/06/2014
- Chemically prepared porous silicon (MSc study, BAP, Physics, Fatih University)
- Nano Ölçekli Yapıların "Small World Network" Teorisi ile Modellenerek Spine Bağlı Transportun İncelenmesi, TÜBİTAK PROJESİ, Bursiyer, , 01/03/2009 - 01/07/2009 (ULUSAL)

Reviewing activities

- ❖ OSA Foundation Review: 2020 Siegman School Applications
- ❖ Applied Physics B (2020, once)
- ❖ Advanced Optical Materials (2019, once)
- ❖ Analyst (2019, three times)
- ❖ Advanced Materials Interfaces (2018, twice)
- ❖ European Journal of Inorganic Chemistry (2018)
- ❖ Tubitak Turkish Journal of Chemistry (2018)
- ❖ Analyst (2018, four times)
- ❖ Advanced Optical Materials (2018, twice)
- ❖ RSC Nanoscale (2014)
- ❖ Wiley Physica Status Solidi C (2015, twice)
- ❖ RSC Advances (2015)
- ❖ Wiley ChemElectroChem (2015)
- ❖ Physica Status Solidi A (2016, three times) (2017, twice)
- ❖ Panelist in the Scientific and Technological Research Council of Turkey (TUBITAK) Project evaluation panel (2015)

Thesis Supervised

- ❖ A BOLAT (Thesis Author) , **A. KARATUTLU (Thesis Advisor)** , Green Synthesis of Organic Carbon Quantum Dots and their structural and electrical properties, Electrical & Electronics Engineering İSTANBUL AREL UNİVERSİTY, Turkey, 2016

News

<https://www.aa.com.tr/tr/bilim-teknoloji/turkiyenin-ilk-milli-aktif-fiberi-bilkent-unamda-uretildi/1748161>

<https://www.hurriyet.com.tr/teknoloji/turkiyenin-ilk-milli-aktif-fiberi-bilkent-unamda-uretildi-41457586>

Established Collaborations

- ❖ Bilkent University UNAM, Ankara, Turkey
- ❖ Centre for Condensed Matter and Materials Physics, School of Physics and Astronomy at Queen Mary, University of London, United Kingdom.
- ❖ Station B18, Diamond Light Source, Didcot Parkway, Oxfordshire, United Kingdom
- ❖ With Dr Ignacio Hernandez, at University of Cantabria, Spain.
- ❖ With Dr Filippo S Boi in College of Physical Science and Technology at Schiun University, P.R. China.

PROFESSIONAL REFERENCES

- ✓ [Dr. Bülend Ortac](#), Principle Investigator of the current research group at Bilkent University UNAM, Turkey.
E-mail: ortac@unam.bilkent.edu.tr
Telephone: +90 312 290 3526
- ✓ [Dr Andrei V Sapelkin](#), Supervisor for the PhD study in Physics at Queen Mary, University of London since October, 2010 to 2014.
Current Position: Lecturer in [Centre for Condensed Matter Materials and Physics](#) in School of Physics and Astronomy, Queen Mary, University of London, UK
E-mail: a.sapelkin@qmul.ac.uk
Telephone: +44 020 7882 3414
- ✓ **Dr Asma Perveen**
Assistant Professor in the Department of mechanical engineering. We have worked in the same faculty for one year.
Nazarbayev University, Astana, Kazakhstan
Tel: +7(7172)709195
Email: asma.perveen@nu.edu.kz
- ✓ **Dr Yuanpeng Zhang**
Dr. Zhang has completed his project in the same group at QMUL and now he is a postdoctoral researcher at Oak Ridge National Laboratory.
E-mail: yuanpeng.zhang@qmul.ac.uk
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In case of a need, the contact details of more references are available

