DR BETÜL ALDEMİR DİKİCİ

Bioengineer / PhD in Biomaterials and Tissue Engineering

Scientific Interests

Tissue engineering, biomaterials, bone and dental regeneration, additive manufacturing, emulsion templating, polymer synthesis, porous materials, decellularisation, and scientific art.

Education

(2016-2020)	**PhD,** University of Sheffield, Materials Science and Engineering, Biomaterials and Tissue Eng. Group
(2019, 02-09)	**Visiting PhD Student,** Massachusetts Institute of Technology, Harvard-MIT Biomedical Engineering Center
(2014-2016)	**MSc,** Izmir Katip Celebi Uni., Biomedical Technologies
(2009-2014)	**BSc,** Anadolu Uni., International Relations
(2009-2013)	**BSc,** Ege Uni., Bioengineering
(2004-2008)	60. Yil Anatolian High School

Professional Experiences

(2020-)	**Lecturer,** Izmir Institute of Technology (IZTECH), Turkey
(2020-2021)	**Visiting Researcher,** The University of Sheffield, UK
(2017-2019)	**Grad. Teaching Asst.,** The University of Sheffield, UK
(2016, 04-08)	**Research Assistant,** Izmir University of Economics, Genetics and Bioengineering, Turkey
(2014-2015)	**TUBITAK Project Research Student,** Izmir Katip Celebi Uni., Biomedical Technologies, Turkey
(2013-2014)	**Sample Acceptance and Reporting Manager,** Ecosur Laboratories, Turkey
(2012, 08-09)	**Intern,** SCK-CEN Nuclear Research Centre, Microbiology Laboratory, Belgium
(2012, 06-07)	**Intern,** Foot and Mouth Disease Institution, Production, Quality, Cell and Virus Bank Laboratories, Turkey
(2012, 01-02)	**Intern,** Tuborg Beer and Malt Industry, Microbiology Laboratory, Turkey
(2011, 06-07)	**Intern,** 9 Eylül Uni. Hospital, Medical Biology and Genetics Laboratory, Turkey
(2010-2011)	**Intern,** Ege University, Natural Products and Microbiology Laboratories, Turkey

CONTACT INFORMATION

Izmir Institute of Technology, Department of Bioengineering, 35430, Urla /İzmir, Turkey

https://aldemirbetul.wixsite.com/baldemir

aldemirbetul@gmail.com

LANGUAGE SKILLS

Turkish	Native
English	●●●●○
German	●●○○○

COMPUTER SKILLS

MS Office	●●●●●
Adobe PS	●●●●○
Adobe AI	●●●●○
Python	●●●○○
Solidworks	●●●○○

Last updated: August 2022

Academic Honors, Awards & Scholarships

(2022) The Best Lecture Design Award by Izmir Institute of Technology, **1st place**

(2022) Biomacromolecules, **Front Cover** *(Volume 23, Issue 3)*

(2021) Mike Sellars Prize and Medal in Materials Science and Engineering for recognition of a high-quality PhD Thesis

(2020) Doctoral Researcher Awards 2020 (DRA 2020), Engineering Sciences, **1st place**

(2020) Medical Illustration Competition of Inonu University, **1st place**

(2019) BITEG 21th Annual White Rose Work In Progress Meeting, **Best Poster Presentation**

(2019) Nature Reviews Cover Image Competition, Nature Reviews Rheumatology, **Winner**

(2019) Engineering Researcher Symposium, Poster of the year, **Winner**

(2019) University of Sheffield, 2019 Image Competition, Category: Biomaterials, **Winner**

(2019) University of Sheffield, Faculty of Engineering Photography Competition, Category: The Future of Engineering, **Winner**

(2019) Battelle - Jeff Wadsworth Visiting Research Fellowship

(2019) Armourers & Brasiers Travel Grant (October)

(2019) Armourers & Brasiers Travel Grant (April)

(2019) Learned Society Travel Grant, University of Sheffield

(2018) BITEG 20th Annual White Rose Work In Progress Meeting, **Best Oral Presentation**

(2018) Early Career Colloid Meeting 2018, **Poster Prize Winner**

(2015) Ministry of National Education of the Republic of Turkey, Post-Graduate Scholarship

(2015) The Scientific and Technological Research Council of Turkey, Project Scholarship

(2015) 19th National Biomedical Engineering Meeting, **Best Poster Award**

(2012) IAESTE Internship Programme, Summer Internship, Belgium

Publications

SCI/SCIE-indexed

- **Aldemir Dikici, B.;** Malayeri, A.; Sherborne, C.; Dikici, S.; Paterson, T.; Dew, L.; Hatton, P.; Ortega Asencio, I.; MacNeil, S.; Langford, C.; Cameron, N.; Claeyssens, F., (2022), **"Thiolene and polycaprolactone methacrylate-based polymerised high internal phase emulsion (PolyHIPE) scaffolds for tissue engineering",** *Biomacromolecules*, 23 (3), *720–730.* https://doi.org/10.1021/acs.biomac.1c01129.

- Dikici, S.; **Aldemir Dikici, B.;** MacNeil, S.; Claeyssens, F., (2021), **"Decellularised Extracellular Matrix Decorated PCL PolyHIPE Scaffolds for Enhanced Cellular Activity, Integration and Angiogenesis",** *Biomater. Sci.,* 9 (21), 7297–7310. https://doi.org/10.1039/D1BM01262B.
- **Aldemir Dikici, B.;** Claeyssens, F., (2020), **"Basic principles of emulsion templating and its use as an emerging manufacturing method of tissue engineering scaffolds",** Front. *Bioeng. Biotechnol.,* 8, 875. https://doi.org/10.3389/fbioe.2020.00875.
- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2020), **"Boosting the osteogenic and angiogenic performance of multiscale porous polycaprolactone scaffolds by in vitro generated extracellular matrix decoration"**, *ACS Appl. Mater. Interfaces.,* 12 (11), 12510-12524. https://doi.org/10.1021/acsami.9b23100.
- Dikici, S.*; **Aldemir Dikici, B.***; Issa Bhaloo, S.; Balcells, M.; Edelman, E.; MacNeil, S., Reilly, G.C.; Sherborne, C.; Claeyssens, F., (2020), **"Assessment of the angiogenic potential of 2-deoxy-D-ribose using a novel in vitro 3D dynamic model in comparison with established in vitro assays"**, *Front. Bioeng. Biotechnol.*, 7 (451), 1–20. https://doi.org/10.3389/fbioe.2019.00451. *(*co-first authors)*
- Mangir, N.; **Aldemir Dikici, B.**; Chapple, C.R.; MacNeil, S., (2019), **"Landmarks in vaginal mesh development: polypropylene mesh for treatment of SUI and POP",** *Nat. Rev. Urol.* 2019, 16 (11), 675–689. https://doi.org/10.1038/s41585-019-0230-2.
- **Aldemir Dikici, B.***; Dikici, S.*; Reilly, G.C.; MacNeil, S.; Claeyssens, F., (2019), **"A Novel Bilayer Polycaprolactone Membrane for Guided Bone Regeneration: Combining Electrospinning and Emulsion Templating"**, *Materials (Basel), 12*, 2643. https://doi.org/10.3390/ma12162643. *(*co-first authors)*
- **Aldemir Dikici, B.**; Sherborne, C.; Reilly, G.C.; Claeyssens, F., (2019), **"Emulsion templated scaffolds manufactured from photocurable polycaprolactone",** *Polymer (Guildf)*, *175*, 243–254. https://doi.org/10.1016/j.polymer.2019.05.023.
- **Aldemir, B.,** Dikici, S., Karaman, O., Oflaz, H., (2017), **"The effect of zinc oxide doping on mechanical and biological properties of 3D printed calcium sulfate based scaffolds"**, *Biocybern. Biomed. Eng.,* 37 (4), 733–741. https://doi.org/10.1016/j.bbe.2017.08.007.
- Dikici, S., **Aldemir, B.**, Gezgin, E., Başer, Ö., Şahin, S., Eser, H., Ercan, U. K., Yılmaz, B., Kelekçi, S., Oflaz, H. (2017), **"Development of a 2-dof uterine manipulator with LED illumination system as a new transvaginal uterus amputation device for gynecological surgeries"**, *Minim. Invasive Ther. Allied Technol.*, 27 (3), 177–185. https://doi.org/10.1080/13645706.2017.1341927.

ULAKBIM-indexed

- Oflaz, H., **Aldemir, B.,** Dikici, S., (2017), **"The Effect of Heat Treatment on Physical, Chemical and Structural Properties of Calcium Sulfate Based Scaffolds"**, Journal of Natural and Applied Science, 21 (1).
- Dikici, S., **Aldemir, B.**, Gezgin, E., Başer, Ö., Şahin, S., Eser, H., Ercan, U. K., Yılmaz, B., Kelekçi, S., Oflaz, H. (2014), **"Development of transvaginal uterus amputation device for laparoscopic hysterectomies in gynecologic surgeries"**, Journal of Natural and Applied Science, 18 (3).
- **Aldemir, B.**, Dikici, S., Öztürk, Ş., Karaman, O., Şendemir Ürkmez, A.i Oflaz, H. (2014), "**3D tissue scaffold printing on custom artificial bone applications**", Journal of Natural and Applied Science, 18 (3).

Conference Papers

- Oflaz, H., Dikici, S, **Aldemir Dikici, B.**, Eser, H., Gezgin, E., Baser, O., Sahin, S.,Yilmaz, B., **"Designing and Prototyping A New Uterine Manipulator with two plane motion mechanism and LED Marker Illumination System"**, 20th Biomedical Engineering Meeting (BIYOMUT), IEEE.
- Dikici, S., Eser,H., **Aldemir, B.,** Gezgin, E., Başer,Ö., Şahin, S., Oflaz, H., (2015), "**Designing and prototyping of a new uterine manipulator which will overcome drawbacks of conventional uterine manipulators and assist laparoscopic hysterectomies**", 19th Biomedical Engineering Meeting (BIYOMUT), IEEE.
- **Aldemir, B.,** Dikici, S.,Karaman, O., Oflaz, H., (2015), "**Development, 3D printing and characterization of calcium sulfate based scaffolds for bone tissue engineering"**, 19th Biomedical Engineering Meeting (BIYOMUT), IEEE.

Presentations

International Presantations

Oral Presentations

- **Aldemir Dikici, B.**, (2021), "Photopolymerised high internal phase emulsions (PolyHIPEs) with tunable morphological properties for soft and hard tissue engineering", International Eurasian Conference on Sci., Engineering and Technology, Ankara, Turkey.
- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2019), "Boosting biological performance of multiscale porous scaffolds by in vitro generated extracellular matrix decoration", TERMIS European Chapter Meeting, Rhodes, Greece.

- **Aldemir Dikici, B**.; Dikici, S.; Reilly, G.C.; MacNeil, S.; Claeyssens, F., (2018), "Scientific&medical illustration: worth a thousand words", International Eurasian Conference on Science, Engineering and Technology, Ankara, Turkey.
- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2018), "Improving biological performance of 3DP multiscale porous polymer scaffolds by in vitro generated extracellular matrix", International Eurasian Conference on Sci., Engineering and Technology, Ankara, Turkey.
- **Aldemir, B.,** Oflaz, H., Karaman, O., (2015), "Non-verbal description of science by medical illustration", 21st International Biomedical Science and Technology Symposium, BIOMED, Antalya, Turkey.

Poster Presentations

- Kul, D., Tihminlioglu, F., **Aldemir Dikici, B.**, (2021), "Biomimetic functionalisation of photocurable polycaprolactone tetramethacrylate-based polymerised high internal phase emulsions (PolyHIPEs) and evaluation of its potential as a bone graft substitute", International Eurasian Conference on Science, Engineering and Technology, Ankara, Turkey.
- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2019), "Development of emulsion templated scaffolds manufactured from photocurable polycaprolactone", TERMIS European Chapter Meeting, Rhodes, Greece.
- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2018), "Effect of in vitro Generated Extracellular Matrix on Osteogenic Potential of Additive Manufactured Multiscale Porous Hybrid Scaffolds", 2018 TERMIS World Congress, Kyoto, Japan.
- **Aldemir, B.,** Dikici, S., Karaman, O., Oflaz, H., (2015), "Development, production and characterization of calcium sulfate based 3D scaffolds", 21st International Biomedical Science and Technology Symposium, BIOMED, Antalya, Turkey.

National Presentations

Oral Presentations

- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2021), Hiyerarşik gözenekliliğe sahip, polimer esaslı doku iskelelerinin geliştirilmesi ve kemik hücre dışı matriks dekorasyonu ile osteoindüktif ve anjiyojenik performansının artırılması, BIOMED2021 (25. Ulusal Biyomedikal Bilim ve Teknoloji Sempozyumu), Ankara, Turkey.
- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2019), "Can the biological performance of 3D printed synthetic polymeric scaffolds be boosted by in vitro generated extracellular matrix decoration?", BioMedEng2019, London, UK.
- **Aldemir Dikici, B.**; (2019), "You want your missing tooth back? Start by winning the competition against your gum tissue!", Engineering Researcher Symposium (ERS) , Sheffield, UK.

- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2018), "Enhancing biological performance of multiscale porous scaffolds by in vitro generated extracellular matrix decoration", BITEG 20th Annual White Rose Work In Progress Meeting, Sheffield, UK. *(Best oral presentation)*
- **Aldemir, B.**, Dikici, S., Öztürk, Ş., Karaman, O., Şendemir Ürkmez, A.i Oflaz, H. (2014), "3D tissue scaffold printing on custom artificial bone applications", Internationally Participated 7. National Biomechanics Congress, Isparta, Turkey.

Poster Presentations

- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2019), "Boosting the osteogenic and angiogenic performance of 3D printed synthetic scaffolds by in vitro generated extracellular matrix decoration", BITEG 21th Annual White Rose Work In Progress Meeting, Sheffield, UK.
- **Aldemir Dikici, B**.; Dikici, S.*; Reilly, G.C.; MacNeil, S.; Claeyssens, F., (2019), "A novel bifunctional membrane for guided bone regeneration: combining electrospinning and emulsion templating", BITEG 21th Annual White Rose Work In Progress Meeting, Sheffield, UK. *(Best poster presentation)*
- **Aldemir Dikici, B**.; Dikici, S.*; Reilly, G.C.; MacNeil, S.; Claeyssens, F., (2019), "Bifunctional guided bone regeneration membrane: combining electrospinning and emulsion templating", BioMedEng2019, London, UK.
- **Aldemir Dikici, B.**; (2019), "Additive manufactured multiscale porous scaffolds with enhanced biological performance for tailor-made bone repair", Engineering Researcher Symposium (ERS), Sheffield, UK. *(Poster of the year)*
- **Aldemir Dikici, B.**; Claeyssens, F., (2018), "Effect of porogenic solvents on morphology of emulsion templated scaffolds made of polycaprolactone, Early Career Colloid Meeting, Sheffield, UK. *(Poster Prize Winner)*
- **Aldemir Dikici, B.**; Reilly, G.C.; Claeyssens, F., (2018), "Photocurable emulsion templated scaffolds made of solely polycaprolactone methacrylate", BITEG 20th Annual White Rose Work In Progress Meeting, Sheffield, UK.
- **Aldemir, B.,** Dikici, S.,Karaman, O., Oflaz, H., (2015), "Development, 3D printing and characterization of calcium sulfate based scaffolds for bone tissue engineering", 19. National Biomedical Engineering Meeting, BİYOMUT, Istanbul, Turkey.

Editorial

(2020-Present)	Materials	Topic Editor / Reviewer
(2021-Present)	Journal of Materials Chemistry B	Reviewer
(2021-Present)	Biomacromolecules	Reviewer
(2021-Present)	Membranes	Reviewer
(2021-Present)	International Journal of Molecular Sciences	Reviewer

(2021-Present)	Crystals	Reviewer
(2021-Present)	Coatings	Reviewer
(2020-Present)	Journal of Functional Biomaterials	Reviewer

Teaching

BE311 Bioprocess Engineering	Lecturer (IZTECH)
BE410 Introduction to Tissue Engineering	Lecturer (IZTECH)
BE208 Biochemistry	Lecturer (IZTECH)
CHEM222 Introduction to Biochemistry	Lecturer (IZTECH)
BE351 Research Projects	Lecturer (IZTECH)
BE352 Research Projects	Lecturer (IZTECH)
COM161 Introduction to Programming and Problem Solving	GTA (TUOS)
MAT1510 Anatomy	GTA (TUOS)

Teamwork Activities

(2021) BioMedEng21, Local Organising Committee, Sheffield, UK

(2014) International Symposium on Innovations in Intelligent Systems and Applications Organization Committee, Izmir, Turkey

(2014) I. Internationally Participated Prostheses, Implants and Orthesis Design Workshop, Organization Committee, Izmir, Turkey

(2011) Cittaslow (Slow City) Annual General Meeting, Volunteer Translator, Izmir, Turkey

Others

Training Program for Certificate of Animal Use in Experimental Studies, 2021, Dokuz Eylul University, Faculty of Medicine, Local Ethics Committee for Animal Experiments (Category: A)

Social Interests

Digital illustration, painting, writing/poetry