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Research interests

- Biomedical Engineering
- Bone Tissue Engineering
- 3D Bioprinting
- Biomaterials
- Regenerative Medicine
- Drug Delivery Systems
- Medical Device Technology

Employment

Department of Chemical and Materials Engineering
Jun 18 2015 → present

School of Engineering
Aug 3 2026 → present

Research outputs

In Vitro Investigation of 3D Printed Hydrogel Scaffolds with Electrospun Tidemark Component for Modeling Osteochondral Interface
Effanga, V. E., Akilbekova, D., Mukasheva, F., Zhao, X., Kalyon, D. M. & Erisken, C., Nov 2024, In: Gels. 10, 11, 745.

Design and characterization of 3D printed pore gradient hydrogel scaffold for bone tissue engineering
Mukasheva, F., Moazzam, M., Yernaimanova, B., Shehzad, A., Zhanbassynova, A., Berillo, D. & Akilbekova, D., Jun 2024 , In: Bioprinting. 39, e00341.

Impact of Hydroxyapatite on Gelatin/Oxidized Alginate 3D-Printed Cryogel Scaffolds
Zhanbassynova, A., Mukasheva, F., Abilev, M., Berillo, D., Trifonov, A. & Akilbekova, D., Jun 2024, In: Gels. 10, 6, 406.

Reasoning on Pore Terminology in 3D Bioprinting
Trifonov, A., Shehzad, A., Mukasheva, F., Moazzam, M. & Akilbekova, D., Feb 2024, In: Gels. 10, 2, 153.

Optimizing scaffold pore size for tissue engineering: insights across various tissue types
Mukasheva, F., Adilova, L., Dyussenbinov, A., Yernaimanova, B., Abilev, M. & Akilbekova, D., 2024, In: Frontiers in Bioengineering and Biotechnology. 12, 1444986.

Urgent health update: rising measles cases in Kazakhstan
Akilbekova, D., Yerdessov, S. & Gaipov, A., Dec 21 2023, In: The Lancet Regional Health - Europe. p. 100828 1 p.

Dual-Crosslinking of Gelatin-Based Hydrogels: Promising Compositions for a 3D Printed Organotypic Bone Model
Shehzad, A., Mukasheva, F., Moazzam, M., Sultanova, D., Abdikhan, B., Trifonov, A. & Akilbekova, D., Jun 2023, In: Bioengineering. 10, 6, 704.

Macroporous 3D printed structures for regenerative medicine applications
Moazzam, M., Shehzad, A., Sultanova, D., Mukasheva, F., Trifonov, A., Berillo, D. & Akilbekova, D., Dec 2022, In: Bioprinting. 28, e00254.

Patient-specific 3D bioprinting for in situ tissue engineering and regenerative medicine
Akilbekova, D. & Turlybekuly, A., Jan 1 2022, *3D Printing in Medicine.* Elsevier B.V., p. 149-178 30 p.

Poly-L-arginine modifications alter the organization and secretion of collagen in SKH1-E mice
Boddupalli, A., Akilbekova, D. & Bratlie, K. M., Jan 2020, In: Materials Science and Engineering C. 106, 110143.

Brillouin spectroscopy and radiography for assessment of viscoelastic and regenerative properties of mammalian bones
Akilbekova, D., Ogay, V., Yakupov, T., Sarsenova, M., Umbayev, B., Nurakhmetov, A., Tazhin, K., Yakovlev, V. V. & Utegulov, Z. N., Sept 1 2018, In: Journal of Biomedical Optics. 23, 9, p. 1-11 11 p., 097004.

Biocompatible scaffolds based on natural polymers for regenerative medicine
Akilbekova, D., Shaimerdenova, M., Adilov, S. & Berillo, D., Jul 15 2018, In: International Journal of Biological Macromolecules. 114, p. 324-333 10 p.

The effect of polarized light on the organization of collagen secreted by fibroblasts
Akilbekova, D., Boddupalli, A. & Bratlie, K. M., Apr 1 2018, In: Lasers in Medical Science. 33, 3, p. 539-547 9 p.

All-plastic-fiber chemical H_2S sensor on smartphone
Sultangazin, A., Kusmangaliyev, J., Aitkulov, A., Akilbekova, D., Olivero, M., Tosi, D. & Dukenbayev, K., Jan 1 2018, *Optical Fiber Sensors, OFS 2018.* OSA - The Optical Society, Vol. Part F124-OFS 2018.

Brillouin light scattering spectroscopy for tissue engineering application
Akilbekova, D., Yakupov, T., Ogay, V., Umbayev, B., Yakovlev, V. V. & Utegulov, Z. N., Jan 1 2018, *Optical Elastography and Tissue Biomechanics V.* Sampson, D. D. & Larin, K. V. (eds.). SPIE, Vol. 10496. 104961I. (Progress in Biomedical Optics and Imaging - Proceedings of SPIE; vol. 10496).

All-POF Chemical H_2S sensor designed for smartphone operation
Aitkulov, A., Akilbekova, D., Tosi, D. & Olivero, M., 2018, In: Proceedings of IEEE Sensors. 2018-January, 8630301.

Design of a Smartphone Plastic Optical Fiber Chemical Sensor for Hydrogen Sulfide Detection
Sultangazin, A., Kusmangaliyev, J., Aitkulov, A., Akilbekova, D., Olivero, M. & Tosi, D., Nov 1 2017, In: IEEE Sensors Journal. 17, 21, p. 6935-6940 6 p.

Patient specific in situ 3D printing
Akilbekova, D. & Mektepbayeva, D., Apr 19 2017, *3D Printing in Medicine.* Elsevier, p. 91-113 23 p.

Poly-l-arginine based materials as instructive substrates for fibroblast synthesis of collagen
Bygd, H. C., Akilbekova, D., Muñoz, A., Forsmark, K. D. & Bratlie, K. M., Sept 1 2015, In: Biomaterials. 63, p. 47-57 11 p.

Quantitative characterization of collagen in the fibrotic capsule surrounding implanted polymeric microparticles through second harmonic generation imaging
Akilbekova, D. & Bratlie, K. M., Jun 30 2015, In: PLOS One. 10, 6, e0130386.

Macrophage reprogramming: Influence of latex beads with various functional groups on macrophage phenotype and phagocytic uptake in vitro
Akilbekova, D., Philiph, R., Graham, A. & Bratlie, K. M., Jan 1 2015, In: Journal of Biomedical Materials Research - Part A. 103, 1, p. 262-268 7 p.

Color center creation in LiF crystals irradiated with Xe, Kr and N ions: Dependence on fluence and beam current density
Dauletbekova, A. K., Akilbekov, A. T., Zdorovets, M. V., Vassil'Eva, A. F. & Akilbekova, D. A., Oct 1 2010, In: Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms. 268, 19, p. 3005-3008 4 p.