

Dr. Derrick Dean, Ph.D.,

Professor & Co-Ordinator of Biomedical Engineering Program

Biomedical Engineering | College of Science, Technology, Engineering and Mathematics

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Education

PhD, Materials Science and Engineering, Univ. of Illinois at Urbana-Champaign

MS, Chemistry, Tuskegee University

BS, Chemistry, Tuskegee University

Biography

Derrick Dean is a Professor of Biomedical Engineering and Coordinator of the Biomedical Engineering program at Alabama State University. Research in his laboratory seeks to understand how cells interact with and respond to engineered tissue scaffolds and how this impacts tissue repair and regeneration. He also studies the structure-processing-property relationships of multifunctional composite materials. He served as the Clark Way Harrison Endowed Professor at Washington University in St. Louis in 2018 and received the Outstanding Scientist in the College of Science, Technology, Engineering and Math at Alabama State University in 2017. Before joining ASU, he held joint appointments in the Materials and Biomedical Engineering departments at the University of Alabama at Birmingham. While there, he received the President's Award for Teaching Excellence. His other professional appointments include Associate Professor of Materials Science and Engineering at Tuskegee University, leader of the Polymer Physics team in the Advanced Technology Group at BF Goodrich in Brecksville, OH and Polymer Morphology Team Leader at the Air Force Research Laboratory in Dayton, OH. He received a PhD in Materials Science and Engineering from the University of Illinois at Urbana-Champaign, as well as a BS and MS in Chemistry from Tuskegee University and was a distinguished graduate from the Air Force ROTC program.

Honors and Awards

- Clark Way Harrison Endowed Professor at Washington University in St. Louis
- Outstanding Scientist in the College of Science, Technology, Engineering and Math at Alabama State University.
- President's Award for Teaching Excellence (UAB)
- Russell Brown Outstanding Researcher (Tuskegee University, Sigma Xi)

Areas of Research

- **Polymers, Tissue Engineering, Composites, Processing, Cells**

Latest Publications

1. Uehlin AF, Vines JB, Feldman DS, Nyairo E, Dean DR, Thomas V. Uni-Directionally Oriented Fibro-Porous PLLA/Fibrin Bio-Hybrid Scaffold: Mechano-Morphological and Cell Studies. *Pharmaceutics*. 2022 Jan 25;14(2):277. doi: 10.3390/pharmaceutics14020277. PMID: 35214010; PMCID: PMC8879164
2. Ayariga, J. A., Huang, H., & Dean, D. (2022). Decellularized Avian Cartilage, a Promising Alternative for Human Cartilage Tissue Regeneration. *Materials (Basel, Switzerland)*, 15(5), 1974. <https://doi.org/10.3390/ma15051974>.
3. R Calcutt, R Vincent, D Dean, TL Arinzeh, R Dixit , Plant cell adhesion and growth on artificial fibrous scaffolds as an in vitro model for plant development, *SCIENCE ADVANCES*, VOL. 7, NO. 43.2.2, 2021.
4. Ayariga J, Dean M, Nyairo E, Thomas V, Dean D. PLA/HA Multiscale Nano-/Micro-Hybrid 3D Scaffolds Provide Inductive Cues to Stems Cells to Differentiate into an Osteogenic Lineage *JOM*. 2021 October 15;. Available from: <https://link.springer.com/10.1007/s11837-021-04912-7> DOI: 10.1007/s11837-021-04912-7.
5. Huang H, Ayariga J, Ning H, Nyairo E, Dean D. Freeze-printing of pectin/alginate scaffolds with high resolution, overhang structures and interconnected porous network. *Additive Manufacturing*. 2021 October; 46:102120-. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S2214860421002852> DOI:10.1016/j.addma.2021.102120.
6. C. Schindler, S Singh, SA Catledge, V Thomas, Patterning of Nano-Hydroxyapatite onto SiO₂ and Electro-spun Mat Surfaces Using Dip-Pen

Nanolithography, Journal of Molecular Structure, Volume 1237, 5 August 2021, 130320.

Coursed Offered

- **BME 110 Introduction to Biomedical Engineering**
- **BME 250 Engineering Thermodynamics**
- **BME 290 Introduction to Materials**
- **BME 410 Biomaterials**
- **BME 412 Tissue Engineering**
- **BME 430 Polymeric Biomaterials**
- **BME 490/491 Senior Design**