



College of Engineering Faculty Research
Areas of Interest
2022 – 2023

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Robby Sanders, Ph.D.

Interim Chair of Chemical Engineering; Associate Professor

Research Interests: Bio-assay development; drug delivery; wound healing.

931-372-3494 | rsanders@tntech.edu | Prescott Hall 311 | [Profile](#)

Professors

Pedro Arce Ph.D.

University Distinguished Faculty Fellow; Professor

Research Interests: Nanostructured materials-with functional performance; micro- and nano-flows in biophysical systems; environmental catalysis; engineering education.

931-372-3297 | parce@tntech.edu | Prescott Hall 207 | [Profile](#)

Joseph J. Biernacki, DRE

University Distinguished Faculty Fellow; Professor

Research Interests: Modeling of multi-scale materials systems composite concrete systems.

931-372-3667 | jbiernacki@tntech.edu | Prescott Hall 312 | [Profile](#) | [Website](#)

Bahman Ghorashi, Ph.D.

Professor

Research Interests: Agile manufacturing; rheology and non-Newtonian fluid flow; blockchain technology and its applications in chemical industry; m2m communication and logistics; leadership in higher.

931-372-6921 | bghorashi@tntech.edu | Prescott Hall 422 | [Profile](#)

Assistant Professor

Laura H. Arias Chavez, Ph.D.

Assistant Professor

Research Interests: Improving sustainability at the water- energy nexus; fabrication and characterization of polymeric membranes; fabrication strategies for improving membrane fouling resistance and selectivity.

931-372-3678 | lchavez@tntech.edu | Prescott Hall 309 | [Profile](#)

Benjamin Mohr, PhD., P.E.

Chair of Civil and Environmental Engineering; Associate Professor of Construction Materials

Research Interests: Durability; microstructure; and chemistry of cement-based materials; early-age behavior of cement and concrete; fiber-reinforced concrete; supplementary cementitious materials.

931-372-3454 | bmohr@tntech.edu | Prescott Hall 216 | [Profile](#)

Professors

Daniel Badoe, Ph.D.

Professor, Transportation Engineering

Research Interests: Urban travel demand modeling; transportation data collection; travel behavior analysis.

931-372-3490 | dbadoe@tntech.edu | Prescott Hall 434 | [Profile](#)

LK Crouch, Ph.D., P.E.

Professor, Construction Materials

Research Interests: Construction materials; aggregates; Portland cement concrete; flowable fill; bituminous materials.

931-372-3196 | lcrouch@tntech.edu | Prescott Hall 316 | [Profile](#)

R. Craig Henderson, Ph.D., P.E.

Professor, Structural Engineering

Research Interests: Masonry; concrete and steel testing and design; structural dynamics and earthquake engineering; computational structural modeling.

931-372-3062 | chenderson@tntech.edu | Prescott Hall 417 | [Profile](#)

Jane Liu, Ph.D.

Professor, Structural Mechanics

Research Interests: Composite materials; vibration analysis; plates & shells; computational mechanics symbolic computer systems in engineering applications; computational algebraic geometry in nonlinear structural analysis.

931-372-3256 | jliu@tntech.edu | Prescott Hal 432 | [Profile](#)

Associate Professors

Sharon Huo Sharon Huo, Ph.D., P.E.

Associate Provost of Academic Affairs; Professor of Structural Engineering

Research Interests: Structural analysis; reinforced concrete design; prestressed concrete design; structural steel design; bridge design.

931-372-3463 | xhuo@tntech.edu | Derryberry Hall 204 | [Profile](#)

Steven Click, Ph.D., P.E.

Associate Professor, Transportation Engineering

Research Interests: Traffic signal design; timing; operations; and analysis; traffic signal system design; timing; operations; and analysis; non-traditional intersection design; operations; and analysis; non-traditional interchange design; operations; and analysis; highway traffic simulation modeling.

931-372-6464 | sclick@tntech.edu | Prescott Hall 350 | [Profile](#)

Tania Datta, Ph.D.

Associate Professor, Environmental Engineering

Research Interests: Biological Wastewater Treatment Process and Design; Urban Water Quality Management; Environmental Microbiology; Resource Recovery from Organic Waste Streams; Sustainable Decision Making; Role of Microorganisms in Natural Aquatic Ecosystems.

931-372-3446 | tdatta@tntech.edu | Prescott Hall 333 | [Profile](#)

Alfred Kalyanapu, Ph.D.

Associate Professor, Water Resources

Research Interests: Climate impacts; computational hydraulics and hydrology; hydraulic/hydrologic modeling urban water management; regional scale flood modeling and simulation.

931-372-3561 | akalyanapu@tntech.edu | Prescott Hall 334 | [Profile](#)

Guillermo Ramirez, Ph.D.

Associate Professor, Structural Mechanics

Research Interests: Theoretical and computational mechanics; mathematical formulation and corresponding computer implementation to describe the electro-mechanical behavior of solids under different types of environments.

931-372-3261 | gramirez@tntech.edu | Prescott Hall 415 | [Profile](#)

Daniel VandenBerge, Ph.D., P.E.

Associate Professor, Geotechnical Engineering

Research Interests: Rapid drawdown analysis; behavior of compacted clays; fully softened shear strength; levee seepage; dam failures; geotechnical reliability analyses; sustainable earth structures; engineering education.

931-372-3257 | dvandenberge@tntech.edu | Prescott Hall 332 | [Profile](#)

Lenly J. Weathers, Ph.D., P.E.

Associate Professor, Environmental Engineering

Research Interests: Transport of pollutants in the environment; transformation of chlorinated compounds; oxidized metals and other pollutants in anaerobic environments in the presence of metallic iron.

931-372-6539 | lweathers@tntech.edu | Prescott Hall 339 | [Profile](#)

Assistant Professor

Tim Huff, Ph.D., P.E.

Assistant Professor

Research Interests: Earthquake engineering; seismic design of structures; ground motion selection and modification for structural analysis; nonlinear analysis of structures in practice; seismic isolation; bridge design.

931-372-3605 | thuff@tntech.edu | Prescott Hall 424 | [Profile](#)

Department of Computer Science

Gerald Gannod, Ph.D.

Chair of Computer Science; Professor

Research Interest: Software engineering; agile software development; agile instruction; enterprise computing; mobile computing; data science; analytics; and machine learning.

931-372-3691 | jgannod@tntech.edu | Bruner Hall 238 | [Profile](#) | [Website](#)

Doug Talbert, Ph.D.

Interim Director, CEROC; Associate Chair for Computer Science; Professor

Research Interest: Machine learning; data mining; medical informatics; and usability.

931-372-6178 | dtalbert@tntech.edu | Bruner Hall 234 | [Profile](#)

Professors

William Eberle, Ph.D.

Professor

Research Interests: Data mining; graph-based anomaly detection; and fraud detection.

931-372-3278 | weberle@tntech.edu | Bruner Hall 235 | [Profile](#) | [Webpage](#)

David Elizandro, Ph.D.

Professor

Research Interests: Institutional leadership; strategic planning; systems integration and effectiveness.

931-372-3386 | delizandro@tntech.edu | Prescott Hall 323 | [Profile](#)

Sheikh Ghafoor, Ph.D.

Professor

Research Interests: Parallel and distributed computing; high performance computing; programming model for heterogeneous high-performance computing environment.

931-372-3687 | sghafoor@tntech.edu | Bruner Hall 429 | [Profile](#)

Ambareen Siraj, Ph.D.

Professor (On Leave of Absence)

Research Interest: Network security; security in smart grids; and security education.

asiraj@tntech.edu | [Profile](#)

Associate Professor

Michael Rogers, Ph.D.

Associate Professor

Research Interests: GPGPU computing; distributed computing; distributed shared memory; operating systems; and network protocols.

931-372-6304 | mrogers@tntech.edu | Bruner Hall 427 | [Profile](#)

Assistant Professors

Maanak Gupta, Ph.D.

Assistant Professor

Research Interests: Foundational cyber and computer security; access control models; formal analysis; secure cyber physical systems; smart and connected cars; internet of things; ai and machine learning assisted security solutions; malware clustering and classification.

931-372-3525 | mgupta@tntech.edu | Prescott Hall 408 | [Profile](#) | [Website](#)

Muhammad Ismail, Ph.D.

Assistant Professor

Research Interests: Cyber-physical security; networking; smart grids; blockchain; resource allocation; machine learning; optimization; stochastic modeling.

931-372-6287 | mismail@tntech.edu | Prescott Hall 409 | [Profile](#)

Susmit Shannigrahi, Ph.D.

Assistant Professor

Research Interests: Computer networks; future internet architectures; networking Internet of Things (IoT) devices; future mobile communications.

931-372-6259 | sshannigrahi@tntech.edu | Bruner Hall 331 | [Profile](#) | [Website](#)

Denis Ulybyshev, Ph.D.

Assistant Professor

Research Interests: Data privacy; web security; information retrieval; industrial control systems and SCADA systems, blockchain-based technologies; machine learning.

931-372-6127 | dulybyshev@tntech.edu | Prescott Hall 406 | [Profile](#) | [Website](#)

Department of Electrical and Computer Engineering

Alan MacKenzie

Chair of Electrical and Computer Engineering; Professor

Research Interest: Wireless communications and networking; dynamic spectrum access systems and spectrum policy; cognitive radio and cognitive networks; applications of game theory and auction theory; error control coding.

931-372-3397 | amackenzie@tntech.edu | Brown Hall 217 | [Profile](#)

Professors

Ali T. Alouani, Ph.D.

Professor

Research Interest: Autonomous robots, Internet of Things (IoT), driverless vehicle, intelligent control systems, mechatronics systems, health monitoring, learning systems, sensor data fusion.

931-372-3383 | aalouani@tntech.edu | Brown Hall 333 | [Profile](#) | [Website](#)

Lori Mann Bruce, Ph.D.

Provost and Vice President of Academic Affairs; Professor

Research Interest: Remote sensing; image analysis; artificial intelligence; data analytics; hyperspectral imaging and precision agriculture.

931-372-3224 | lbruce@tntech.edu | Derryberry Hall 204 | [Profile](#)

Joseph Ojo, Ph.D.

Professor

Research Interest: Electric machine analysis and design; adjustable; speed motor drives; power electronic convertors; control theory applied to power electronics and power systems, power systems economics and deregulation issues.

931-372-3869 | jojo@tntech.edu | Brown Hall 323 | [Profile](#)

Ghadir Radman, Ph.D.

Professor

Research Interest: Smart grid; Integration of renewable energy sources; Power system operation/control.

931-372-3520 | gradman@tntech.edu | Prescott Hall 433 | [Profile](#)

Kumar Yelamarthi, Ph.D.

Associate Dean of Academic Affairs for the College of Engineering; Professor

Research Interest: Hardware assisted security; vehicular ad hoc network (VANET); security & privacy in vehicle communication; federated machine learning; engineering education.

931-372-3172 | kyelamarthi@tntech.edu | Clement Hall 201 | [Profile](#)

Associate Professors

Jeffrey Austen, Ph.D.

Associate Professor

Research Interest: Signal processing; communication systems.

(931)372-3485 | jausten@tntech.edu | Prescott Hall 440 | [Profile](#)

Indranil Bhattacharya, Ph.D.

Associate Professor

Research Interest: High-efficiency solar cells; high-energy-density sodium and lithium-ion batteries; wireless power transfer; semiconductor electronics; photonics and optics; electromagnetics.

931-372-3352 | ibhattacharya@tntech.edu | Prescott Hall 440A | [Profile](#)

JW Bruce, Ph.D.
Associate Professor

Research Interest: Data converter architectures; embedded and cyber-physical systems design; quantum computing logic systems; integration of unmanned aerial vehicles in the national airspace; engineering education.

931-372-3453 | jwbruce@tntech.edu | Prescott Hall 450 | [Profile](#)

Tarek Elfouly, Ph.D.
Associate Professor

Research Interest: Structural health monitoring (SHM) using wireless sensor networks (WSNs).

931-372-3847 | telfouly@tntech.edu | Brown Hall 210 | [Profile](#)

Syed Hasan, Ph.D.
Associate Professor

Research Interest: Artificial intelligence for edge computing; edge intelligence; security threats in deep learning architectures; Internet of Things'; vulnerabilities against hardware based attacks; machine learning algorithms on hardware.

931-372-3462 | shasan@tntech.edu | Brown Hall 319 | [Profile](#) | [Website](#)

Mohamed Mahmoud, Ph.D.
Associate Professor

Research Interest: Security & privacy in smart grid, vehicular ad hoc network (VANET), and cloud applications.; secure/privacy-preserving machine learning models.; blockchain; cryptography and machine learning.

931-372-3677 | mmahmoud@tntech.edu | Brown Hall 331 | [Profile](#) | [Website](#)

Assistant Professors

Nan Chen, Ph.D.
Assistant Professor

Research Interest: Smart grids; mobile vehicle-to-grid technique; next-generation wireless and resource management for vehicular communication.

931-372-3349 | nchen@tntech.edu | Brown Hall 334 | [Profile](#)

Syed Ali Asad Rizvi, Ph.D.
Assistant Professor

Research Interest: Control theory; reinforcement learning; autonomous systems; cyber-physical systems; facilities planning and material handling; freight modeling and logistics; microalloying

and mechanical behavior; modern manufacturing systems; optimization and simulation modeling; production planning and control.

931-372-3450 | svizvi@tntech.edu | Prescott Hall 440B | [Profile](#)

Charles Van Neste, Ph.D.

Assistant Professor

Research Interest: Energy generation and transmission; wireless and quasi-wireless power transfer; high frequency inverter design; electronic instrumentation; electromagnetic interactions.

931-372-3682 | cvanneste@tntech.edu | Prescott Hall 407 | [Profile](#)

Department of General and Basic Engineering

Chris Wilson Ph.D.

Chair of General and Basic Engineering; Associate Professor of Mechanical Engineering

Research Interest: Composite materials testing; materials properties; simulation.

931-372-3216 | chriswilson@tntech.edu | Clement Hall 321 | [Profile](#)

Associate Professors

Kristine Craven Ph.D.

Associate Professor

Research Interest: Teaching and learning strategies; student success and retention; first year engineering programs.

931-372-6027 | kcraven@tntech.edu | Clement Hall 318 | [Profile](#)

Mazen Hussein, Ph.D.

Associate Professor

Research Interest: Freight modeling and logistics; facilities planning and material handling; optimization and simulation modeling; production planning and control; reverse logistics and recycling; modern manufacturing systems; microalloying and mechanical behavior.

931-372-3827 | mhussein@tntech.edu | Clement Hall (CLEM) 320 | [Profile](#)

John Tester, Ph.D.

Associate Professor

Research Interest: Manufacturing for design (M4D); additive manufacturing.

931-372-6796 | jtester@tntech.edu | Clement Hall (CLEM) 316 | [Profile](#)

Assistant Professors

Michael Wells

Assistant Professor

Research Interest: Website development; global engineering communication; assisting international students in acclimating to American culture.

931-372-3829 | mwells@tntech.edu | Clement Hall (CLEM) 326 | [Profile](#)

Department of Manufacturing and Engineering Technology

Fred Vondra, Ph.D.

Chair of Manufacturing and Engineering Technology; Professor

Research Interest: Metal casting processes; foundry tooling materials; industrial maintenance.

931-372-3263 | fvondra@tntech.edu | Lewis Hall 107 | [Profile](#)

Professor

Ismail Fidan, Ph.D.

Professor

Research Interest: Additive manufacturing; smart manufacturing; electronics manufacturing; stem education and distance learning/remote laboratories.

931-372-6298 | ifidan@tntech.edu | Lewis Hall 103 | [Profile](#)

Associate Professor

Duckbong Kim, Ph.D.

Associate Professor

Research Interest: Advanced manufacturing, wire + arc additive manufacturing (WAAM), metal big area additive manufacturing (mBAAM), data analytics, machine vision, high temperature alloys, and high entropy alloys (HEAs).

931-372-3227 | dkim@tntech.edu | Lewis Hall111A | [Profile](#)

Department of Mechanical Engineering

Mohan Rao, Ph.D.

Chair of Mechanical Engineering; Professor

Research Interests: Vibrations; acoustics; noise control; damping design; sound quality and auditory engineering.

931-372-3254 | mrao@tntech.edu | Brown Hall 232 | [Profile](#)

Jie Cui, Ph.D.

Associate Chair of Mechanical Engineering; Professor

Research Interests: Computational fluid dynamics; turbulence modeling; large eddy simulation; numerical heat transfer; thermal fluids.

931-372-3357 | jiecai@tntech.edu | Brown Hall 231 | [Profile](#)

Professors

Stephen Canfield, Ph.D.

Professor

Research Interests: Robotics; dynamic modeling; compliant mechanisms; smart actuators; mechatronics.

931-372-6359 | scanfield@tntech.edu | Brown Hall 304 | [Profile](#)

Stephen Idem, Ph.D.

Professor

Research Interests: Scale model testing; fluid flow measurement; thermal modeling; fluid mechanics; heat transfer.

931-372-3607 | sidem@tntech.edu | Brown Hall 308 | [Profile](#)

Joseph C. Slater, Ph.D., P.E.

Dean of the College of Engineering; Professor of Mechanical Engineering

Research Interests: Vibration of structures and machines; aeroelasticity; linear and nonlinear system identification; experimental modal analysis; nonlinear dynamics; cyber physical systems; morphing wing control; turbomachinery blade vibration.

931-372-3172 | jslater@tntech.edu | Clement Hall 201 | [Profile](#)

Jiahong Zhu, Ph.D.

Professor

Research Interests: Solid oxide fuel cell; high-temperature materials; coatings; environmental effects in advanced materials; intermetallics.

931-372-3186 | jzhu@tntech.edu | Brown Hall 116 | [Profile](#)

Associate Professors

Steven Anton, Ph.D.

Associate Professor

Research Interests: Energy harvesting; smart materials; piezoelectric sensing; biomedical sensing; robotics-based stem education; structural health monitoring; 3D printing.

931-372-3287 | santon@tntech.edu | Brown Hall 328 | [Profile](#)

Pingen Chen, Ph.D.

Associate Professor

Research Interests: Modeling and control of engine; emission control; automated and connected vehicles; electric vehicle control and optimization; nonlinear control and optimization.

931-372-3310 | pchen@tntech.edu | Brown Hall 211 | [Profile](#)

Bruce Jo, Ph.D.

Associate Professor

Research Interests: Fundamentals of Sensors and Signal Processing; Aerodynamics Analysis and Control Allocation for New Concept Aircraft; Morphing Structure & Control and their Applications; Morphing Mechanism Design and Control; Dynamics and their Applications; Technology Development for Human Mimicking and Function Enhancement.

931-372-6403 | bj@tntech.edu | Brown Hall 317 | [Profile](#)

Ethan Languri, Ph.D., P.E.

Associate Professor

Research Interests: Heat transfer study of functionalized nanodiamond colloids; latent thermal energy storage systems; sustainable evaporation in porous media; industrial equipment energy efficiency enhancement; heating, ventilation and air conditioning.

931-372-6790 | elanguri@tntech.edu | Brown Hall 240 | [Profile](#)

Sally Pardue, Ph.D.

Associate Professor

Research Interests: Random vibrations; modal analysis; non-destructive evaluation; machine design.

931-372-3309 | spardue@tntech.edu | Brown Hall 329 | [Profile](#)

Rory Roberts, Ph.D.

Associate Professor

Research Interests: transient model for propulsion; power and thermal systems for system design; optimization and control architecture development.

931-372-3260 | rroberts@tntech.edu | Brown Hall 312 | [Profile](#)

Assistant Professors

Ahmad Vasselbehagh, Ph.D.

Assistant Professor

Research Interests: Turbulence and vortex dynamics; renewable energy generation; energy storage: atmospheric flows; fluid-structure interactions.

931-372-6468 | avasselbehagh@tntech.edu | Brown Hall 322 | [Profile](#)

Peng Zhang, Ph.D.

Assistant Professor

Research Interests: Computational fluid dynamics; experimental fluid and solid mechanics; fluid-structure interactions; multi-functional materials; optimal design.

931-372-3323 | pzhang@tntech.edu | Brown Hall 329 | [Profile](#)

Center for Energy Systems Research (CESR)

Satish M. Mahajan, Ph.D.

Director of CESR; Professor of Electrical Engineering

Research Interest: Optoelectronics (lasers; solar cells; optical fibers); electromagnetics; wireless charging of EVs; sensors; renewable energy.

931-372-3875 | smahajan@tntech.edu | Prescott Hall 231 | [Profile](#)

Ali Arzani, Ph.D.

Research Assistant Professor

Research Interests: Grid-Friendly, Smart, and Intelligent Control of Inverter-Based Resources; Transmission Planning with EMT Software; Real-Time Simulations and HIL Studies; Active Distribution Networks.

931-372-3653 | arazani@tntech.edu | Prescott Hall 438 | [Profile](#)

Center for Manufacturing Research (CMR)

Ying Zhang, Ph.D.

Director of CMR; Professor of Mechanical Engineering

Research Interests: Protective coatings; high-temperature materials; thermal barrier coatings (TBC); chemical vapor deposition (CVD).

931-372-3362 | yzhang@tntech.edu | Prescott Hall 229 | [Profile](#)

Nan "Terry" Guo, Ph.D.

Assistant Research Professor

Research Interests: NextG wireless communication & networking; Data & information science (data science, information theory, detection & estimation theory, signal processing, sensing, etc.); Industrial IoT & secure smart manufacturing.

931-372-3102 | nguo@tntech.edu | Clement Hall 401 | [Profile](#)

Cybersecurity Education, Research and Outreach Center (CEROC)

Doug Talbert, Ph.D.

Interim Director of CEROC; Associate Chair for Computer Science; Professor of Computer Science

Research Interest: Machine learning; data mining; medical informatics; and usability.

931-372-6178 | dtalbert@tntech.edu | Bruner Hall 234 | [Profile](#)