

Dr. Deandrae L. W. Smith

Position and Affiliation

Assistant Professor, Food Science

Courtesy Appointment: Agricultural & Biological Engineering
Purdue University (2022–Present)

Research Focus

Dr. Smith develops **predictive electromagnetic (EM) processing frameworks** for food and agricultural systems. Her research advances postharvest and processing operations from empirical, equipment-specific parameter tuning toward **physics-informed, mechanistic engineering**. Central to this work is a transferable **Energy–Structure–Function (ESF) framework**, which explicitly links electromagnetic energy exposure histories to material structure and resulting quality, safety, and functional outcomes across laboratory, pilot, and industrial processing scales.

Scholarly Output and Impact

(All metrics below reflect work conducted during the Purdue University academic appointment, 2022–Present.)

Scholarly Metrics

- Peer-reviewed journal articles: **6 published**
- Manuscripts in review or preparation: **5**
- Book chapters: **3 published**
- Total Google Scholar citations: **362**
- Citations since 2021 (primarily Purdue-era publications): **308**
- h-index: **9**

Dr. Smith's publications emphasize **framework development, mechanistic interpretation**, and **cross-system validation**, rather than optimization of single platforms or isolated unit operations.

Teaching and Curriculum Leadership

(Purdue University, 2022–Present)

Dr. Smith's teaching emphasizes **process engineering principles, industrial relevance**, and **application to agricultural systems**. Courses taught and developed include:

- **FS 16200 – Introduction to Food Processing**: Fully redesigned course (Spring 2026)
- **FS 49100 – Dairy Products + Processing**
- **FS 45500 – Cereal Chemistry + Processing**

Leadership & Professional Visibility

- **ASABE (American Society of Agricultural & Biological Engineers)**:
 - Chair, PRS 701: Postharvest Processing
 - Chair, PRS 707: Drying and Storage
- **IEEE (Institute of Electrical and Electronics Engineers)**:
 - Invited speaker at the International Microwave and Antenna Symposium (Kenya, 2025)
- **USDA National Institute of Food and Agriculture (NC-213)**:

- Multistate Collaborator in Grain Quality and Bioprocess Co-Product Systems

Recognition

- **Purdue College of Agriculture Citation Growth Award (2024)**
- **Andersons Cereals & Oilseeds Early Career Award (2026)**