



# Rapid detection and prediction of functional characteristics of dairy powders using near-infrared spectroscopy

## A model for predicting the functional properties of dairy powders characterized using NIR spectroscopy

**IP Status:** Provisional Patent Application Filed

### Applications

- Dairy powder analysis
- Dairy powder quality control

### Technology Overview

Dairy powders are susceptible to functional changes during storage and transportation that are challenging to rapidly analyze with conventional methods. Researchers at the University of Minnesota have developed a multivariate analysis to predict foaming capacity, foaming stability, and solubility using near-infrared spectroscopy. Measurements are made directly on the dairy powder, without any additional preparation. With this model, rapid predictions of functional dairy properties can be integrated into processing lines for real-time decision-making.

### Phase of Development

#### TRL: 4-5

Code has been developed and validated using simulations and experimental studies using five different sets of commercial dairy powders stored at three different humidities and three different temperatures for 3 and 10 days.

### Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

Please contact our office to share your business' needs and learn more.

### Researchers

- [Kumar Mallikarjunan, PhD](#) Professor, Department of Food Science and Nutrition
- [Muath Alessa, MS](#) Graduate Student, Department of Food Science and Nutrition
- [Sonali Raghunath, PhD](#) Lab and Project Manager, Department of Food Science and Nutrition
- [Priyanshi Chaturvedi](#) Graduate Student, Department of Food Science and Nutrition

### Technology ID

2024-025

### Category

All Technologies  
Engineering & Physical  
Sciences/Instrumentation,  
Sensors & Controls  
Engineering & Physical  
Sciences/MRI & Spectroscopy  
Software & IT/Algorithms  
Agriculture & Veterinary/Food  
Science & Nutrition

### Learn more

