

Crystallization Method to Reduce Filtration Time of Agrochemical Products

Track Code: 2020-NAGY-69085

Categories:

- Biotechnology
- Chemical Engineering

Keywords:

- Agrochemical
- Biotechnology
- Chemical Engineering
- Crystallization
- Crystallization Design
- Rapid Filtration

Purdue University researchers have developed a crystallization methodology for more efficient purification of agrochemical compounds. Agrochemical companies need to abide by purity standards for the products and compounds they produce. Crystallization is a common technique utilized to refine impure compounds but is rife with challenges including long process and filtration times. To address these problems, Purdue University researchers developed an approach that optimizes the process time of crystallization. The system measures the real-time turbidity of the crystallization process and converges on a temperature to achieve optimum crystal growth. This technology has been used on a proprietary agrochemical compound and displayed three to four times faster filtration after crystallization of 200 grams of material (in 500 milliliter and 2-liter chambers) than traditional filtration methods. Successful implementation of this method not only generates feasible process parameter trajectories of an unknown agrochemical crystallization process with minimal thermodynamic knowledge, but also provides invaluable process and thermodynamic data (solubility, metastable zone width, crystallization kinetics) for future experimental or modeling studies. This technology promises to provide agrochemical companies with a more efficient process for attaining purity standards through crystallization.

Technology Validation: With a proprietary agrochemical compound, the researchers improved filtration times three to four fold over traditionally used filtration methods.

Advantages

- Increased Efficiency of Agrochemical Compound Crystallization
- Significantly Reduces Filtration Time
- Rapid Process Design of Unknown Agrochemical Crystallization Systems

Applications

- Agrochemical Crystallization
- Compound Purification

People:

- Nagy, Zoltan Kalman (Project leader)
- Chappelow, Chris
- Larsen, Paul
- Wu, Wei-Lee

Intellectual Property:

Application Date: November 11, 2020

Type: Provisional-Patent

Country of Filing: United States

Patent Number: (None)

Issue Date: (None)

Contact OTC:

Purdue Office of Technology Commercialization
The Convergence Center
101 Foundry Drive, Suite 2500
West Lafayette, IN 47906

Phone: (765) 588-3475

Fax: (765) 463-3486

Email: otcip@prf.org