



이 영 재 전임연구원

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Research Interests

- Cellulose and cellulose derivatives
- Organic/inorganic composites
- Functional polymer materials

Education

- 2017: Yeungnam University
(Ph.D. in Textile Eng.)
- 2008: Yeungnam University
(M.S. in Textile Eng.)
- 2006: Yeungnam University
(B.S. in Fiber Mater. Eng.)

Professional Experience

- 2010-2014: R&D team manager,
Wooyang Advanced Materials Co., Korea

Introduction to Research

Utilization of renewable resources is an important step towards a more sustainable society. Cellulose has long attracted much attention for material usage because of its abundance, renewability, and useful mechanical properties. However, cellulose processing remains a challenge as it is insoluble in water and common organic solvents, due to strongly pronounced hydrogen bonds. The potential of cellulose can only be fully exploited through simple and environmentally benign processing techniques.

The most interest my ongoing research aims to find efficient and green solvent systems for cellulose and biomass. Especially, I investigated the control of the cellulose solution properties for the optimization of forming process (spinning, casting, etc) using a co-solvent system. Also, I have investigated the chemical modification and derivatization of various cellulose resources for the production many eco-friendly industrial products such as hygiene, wound dressing materials, mask sheet, functional textile, and thermoprocessable bio-plastics.

The resultant of my research, such as cellulosic bio-materials have potential applications not only in the replacement of existing petroleum-based polymers but also in cellulosic functional polymeric materials for biomedical applications.

Research Publication (selected)

1. Structure and Mechanical Properties of Regenerated Cellulose Fibers Wet-Spun from Ionic Liquid/Cosolvent Systems, *Fibers and Polymers*, 20, 501-511, 2019.
2. C2-Functionalized 1,3-dialkylimidazolium Ionic Liquids for Efficient Cellulose Dissolution, *Journal of Molecular Liquids*, 234, 111-116, 2017.
3. Influence of Water on Phase Transition and Rheological Behavior of Cellulose/Ionic Liquid/Water Ternary Systems, *Journal of Applied Polymer Science*, 133, 44658, 2016.
4. Preparation of Monodisperse Poly(vinyl alcohol) (PVA) Nanoparticles by Dispersion Polymerization and Heterogeneous Surface Saponification, *Fibers and Polymers*, 17, 502-511, 2016.
5. Preparation and Characterization of High-Molecular-Weight Atactic Poly(vinyl alcohol)/Sodium Alginate/Silver Nanocomposite by Electrospinning, *Journal of Polymer Science: Part B: Polymer Physics*, 47, 1916-1926, 2009.

Patents (selected)

1. 혼성 셀룰로스 에테르의 제조방법
2. 셀룰로오스 분해율이 낮은 이온성 액체
3. 공용매를 이용한 고결정성 재생 셀룰로오스 섬유 제조 방법
4. 형태 안정성이 우수한 고흡수성 셀룰로오스계 섬유 소재의 제조 방법