

JOINT EVENT ON

# 5<sup>th</sup> International Conference on Bioplastics and 6<sup>th</sup> World Congress on Biopolymers

September 07-09, 2017 | Paris, France

## Keratin from camel and cashmere hairs: processing evaluation

Yuejiao Yang<sup>1,2</sup>, Claudio Migliaresi<sup>1</sup>, Danaa Ganbat<sup>3</sup>, Jie Chen<sup>2</sup> and Antonella Motta<sup>1</sup><sup>1</sup>University of Trento, Italy<sup>2</sup>Shanghai University, China<sup>3</sup>Mongolian University of Science and Technology, Mongolia

Keratin, a fibrous protein, is abundantly available from a variety of sources including human hairs, wool and feathers. Keratin exhibits a stable three dimensional polypeptide structure consisting of a triple-helix of protein chains held together by a range of covalent (disulfide bonds) and non-covalent interactions. Like many natural biopolymers, keratin has shown useful applications as biomaterial due to its intrinsic biocompatibility, biodegradability, mechanical durability, and natural abundance. However, the dissolution and processing of keratin in common solvents is difficult. Many reagents have the capability to reduce the disulfide bonds, preserve and maintain the protein structure; however these materials are often toxic. In this work, we have investigated the dissolution and regeneration of keratin from camel hair and cashmere by using two ionic liquids (ILs), 1-butyl-3-methylimidazolium chloride ([BMIM]cl) and N,N-dimethylammonium formate ([DMEA][HCOO]). Dissolution was conducted at 130°C for 10 hours and the water insoluble fraction was recovered by addition of water to the solution and then lyophilization. The remaining fraction, consisting of water soluble fragments, was dialyzed against water and then lyophilized to recover the fragments. The mechanism of dissolution by ILs was observed by microscope with single fiber. The structure and properties of the regenerated, water insoluble and soluble fractions were investigated by Amino acid analysis, SEM, FTIR, DSC and TGA with the comparison of raw materials, and the soluble fraction was characterized by protein quantification and gel electrophoresis.

### Biography

Yuejiao Yang is a third year PhD student at the School of Environmental and Chemical Engineering, Shanghai University, China. She is a Visiting PhD student in the Department of Industrial Engineering and Biotech Research Centre, University of Trento, Italy. She started working with biopolymers during her Master's degree and currently her research focuses on the extraction of keratin from animal hairs by using ionic liquids.

yuejiao.yang@studenti.unitn.it

### Notes: