



Friday February 7 2020  
10:10-11:00 am  
113 McBryde Hall

**“Re-thinking the use of trees. Added-value solutions from ligno-cellulosic fibers”**

**Prof. Maria Soledad (Sole) Peresin**

**School of Forestry and Wildlife Sciences, Forest Products Development Center at Auburn University, Auburn, Alabama**

**Host: Dr. Johan Foster**



**Abstract**

Produced by chemical, mechanical, or enzymatic processing of lignocellulosic feedstock, nanocelluloses are nanosized cellulose particles with remarkable properties and are very appealing for multiple novel applications in materials science. Colloidal suspensions of nanocellulose exhibit steady gel-like structure at low solids content, suitable to be incorporated in formulations for thickeners, emulsifiers and stabilizers for a variety of active agents. Moreover, their high surface area makes them an ideal template for a variety of surface modifications, opening their applications range to non-conventional applications.

Peresin’s lab dedicates to understand the surface chemistry of nanocellulosic substrates, as well as their interactions with other bio-based polymers such as pectin, chitosan, and lignin for optimum performance. In this seminar, Dr. Peresin will discuss her group efforts on understanding interfacial behavior of micro/nano-cellulose materials for a variety of bio-based solutions for applications such as adhesives for wood composites, water remediation as well as encapsulation and slow release substrates.

**Bio-sketch**

Dr. Maria Soledad (Sole) Peresin got her Licenciata in analytical chemistry in 2007, from Universidad Nacional del Litoral (Argentina) with focus on pulp and paper chemistry. In 2011, she obtained her Ph.D. in Forest Biomaterials degree from North Carolina State University (USA). In 2010 she was a Visiting Scholar at the Department of Forest Products Technology, Aalto University (Finland). After finalizing her doctoral dissertation, in 2011 she joined the High Performance Fibre Products Knowledge Team at VTT, for her post-doctoral studies and where she continued working as a Senior Scientist.

In 2016, she started her appointment as an Assistant Professor at the School of Forestry and Wildlife Sciences, Forest Products Development Center at Auburn University. Her focus is on the development of value-added products from biomass, with emphasis on using nanocellulose, hemicelluloses and lignin in novel applications such as engineered high-strength materials through electrospinning, film casting, wet-spinning, among other processing techniques. She has over ten years of academic experience with strong emphasis on nanocomposite materials, surface chemistry of plant cell wall components and their interactions, including studies of the materials in model surface approach.

During her time at Auburn, Dr. Peresin has established a solid multidisciplinary research platform that gathers expertise in the areas of chemistry, pharmacy, materials sciences and engineering, as

well as product development, encompassing the needs for stimulating new businesses in food, pharmaceutical, biotechnology and medicine sectors, through novel value-added products from biomass (wood, annual crops, agro-forestry, sericulture, etc.). Her research group focuses on surface modification of nanocellulose fibers for water remediation, macromolecules immobilization as well as on the development of composite materials using bio-based polymers.

Peresin has mentored 23 undergrad and graduate students over her career (Total 11 females and 13 males). The impact of her research is well documented with 29 publications, 5 book chapters and over 90 presentations in national and international conferences, including invited talks. She is also co-author of 7 invention and patent disclosures. She is an editor of the book *Lignocellulosics: Renewable feedstock for (tailored) functional materials and nanotechnology*". Editorial Elsevier (in press); a member of the editorial board member of *Revista Investigaciones Aplicadas*" (Journal of Applied Research) Universidad Pontificia Bolivariana (Colombia) since 2012 and *Forestry Research and Engineering: International Journal* since 2017. She has also served as referee of a number of Journal Papers, such as *Cellulose*, *Biomacromolecules*, *Carbohydrate Polymers*, *ACS Sustainable Chemistry & Engineering*, among others.

Dr. Peresin currently acts as Member at large and Events Chair at the Cellulose and Renewable materials (CELL) division of the American Chemical Society (ACS), and has been actively involved with the TAPPI Nano Division.

---