# THIN FILMS OF POLYSACCHARIDES: FUNCTIONAL AND VERSATILE SURFACES

**D. F. S. Petri**[1], E. M.A. Pereira[1], M. R. Gouvea[2], M. -R. Sierakowski[2] R. A. Moreira[3]

[1] Instituto de Química – Universidade de São Paulo, 05508-900 São Paulo, SP, Brasil. E-mail: dfsp@usp.br. [2] Biopol/DQUI - Universidade Federal do Paraná, CP 19046, 81531-990, Curitiba, PR, Brasil. [3] Departamento de Bioquimica e Biologia Molecular/Universidade Federal do Ceará, 60451-970 Fortaleza, Ceara, CE, Brasil

Building up thin films of polysaccharides onto planar surfaces brings the advantages of creating functional surfaces for developing of diagnostics kits or biosensors. This presentation will show the assembling of Xyloglucans (XG) extracted from three different sources, namely, *Copaífera langsdorffi*, *Hymenaea coubaril* and *Tamarindus indica*, onto $Si/SiO_2$ wafers by means of ellipsometry and atomic force microscopy (AFM). Blends of XG and alginates (ALG) or starch were obtained following an experimental design, where pH, temperature and $Ca^{2+}$ ions concentration were varied and the mean film thickness D was measured. The largest thickness values were obtained for blends of XG and ALG or XG and starch under basic conditions and higher concentration of $Ca^{2+}$ ions. Under high pH polysaccharides hydroxyl groups are deprotonated and carry many negative charges, which lead to conformational changes, and $Si/SiO_2$ surfaces are also negatively charged. $Ca^{2+}$ ions play an important role in this system, since they can adsorb onto $Si/SiO_2$ surfaces and on polysaccharide chains, enabling strong adsorption. The adsorption of two lectins, Concanavalin A (ConA) and Canavalia brasiliensis (ConBr) onto XG- or XG blends-covered substrates was also investigated. Regardless the source, ConA presented similar adsorption of behavior of onto XG films. D of adsorbed ConA amounted to $(1.9 \pm 0.2)$ nm, which is less than the size of a monomer of the lectin. The adsorption behavior of ConBr onto XG-ALG blends was similar to that onto XG-starch, D amounted to $(3.8 \pm 0.7)$ nm, which corresponds to homogeneous monolayers, as evidenced by AFM.

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