

# 3<sup>rd</sup> International Conference on **Earth Science & Climate Change**

July 28-30, 2014 DoubleTree by Hilton Hotel San Francisco Airport, USA

## Chemical characterization of tealeaf wastes for their application on decontamination of wastewaters

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**L**ignocellulosic materials are novel adsorbents for the removal of inorganic and organic pollutants from contaminated wastewaters. The adsorption mechanism is strongly associated with the physical and chemical properties of these materials. Instrumental and chemical analyses have been carried out to determine the stability, composition, pollutant affinity and selectivity of these biomaterials. In this study, spent tealeaves of green tea, peppermint and chamomile were studied. Thermogravimetric analysis indicated that the novel materials resist temperatures up to 250°C. Specific surface area and porosity were determined by methylene blue and iodine numbers quantification. These results show that these materials have similar areas and porosities when compared to activated carbon. FT-Infrared spectroscopy of the materials suggests the presence of carboxyl and hydroxyl groups as potential adsorption sites for the removal of pollutants. Finally, scanning electron micrographs show heterogeneous surfaces for all the adsorbents, demonstrating the existence of pockets and protrusions that can retain and trap pollutants inside these materials. These positive results demonstrate that naturally occurring materials have strong chemical and physical properties and are able to compete with commonly used adsorbents such as activated carbon.

### Biography

Abel E. Navarro received his PhD degree in Biomolecular Chemistry at New York University. Now, as a junior Faculty at BMCC, Prof. Navarro is developing new bioremediation alternatives for the elimination of organic and inorganic pollutants from wastewaters in batch and continuous-flow experiments. His main target is the development and chemical modification of natural materials that are cost-effective and comparable to the currently available decontaminating techniques. Navarro has a publication record of more than 30 papers in specialized and peer-reviewed journals and has participated in several conferences. He also serves as Associate editor and reviewer in many journals across the world. This study was done in collaboration with the Pontificia Universidad Católica del Perú and Universidad Peruana Cayetano Heredia under the project N° 001-2012-L'Oreal-CONCYTEC.

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