



## Searching for recyclability of modified clays for an environmental application

Carmen Del Hoyo Martínez, Marina Solange Lozano García, Vicente Sánchez Escribano, and Jorge Antequera  
SALAMANCA, FACULTY OF CHEMICAL SCIENCES, INORGANIC CHEMISTRY, SALAMANCA, Spain  
(hoyo@usal.es)

Thanks to the development of the science and the technology of the nourishment in the last 50 years, there have revealed itself several new substances that can fulfill beneficial functions in the food, and these substances, named food additives, are today within reach of all. The food additives recover a very important role in the complex nourishing supply. The additives fulfill several useful functions in the food, which often we give for sat. Nevertheless the widespread use of food additives in the food production also influences the public health. The food industries, which are very important for the economy, spill residues proved from its activity that they have to be controlled to evaluate the environmental impact and to offer the necessary information about the quantitative evaluation of the chemical risk of the use of food additives for the public health.

The clay materials have led to numerous applications in the field of public health (del Hoyo, 2007; Volzone, 2007) having been demonstrated its effectiveness as adsorbents of all contaminants. Some biodegradable materials are used for for adsorption of chemical contaminants: lignins (Valderrabano et al., 2008) and also clays and clay minerals, whose colloidal properties, ease of generating structural changes, abundance in nature, and low cost make them very suitable for this kind of applications.

Among the strategies used at present to preserve the quality of the water and this way to diminish the environmental risk that supposes the chemical pollution, stands out the use of adsorbents of under cost, already they are natural or modified, to immobilize these compounds and to avoid the pollution of the water with the consequent reduction of environmental and economic costs.

We have studied the adsorption of several contaminants related to the food industry by natural or modified clays, searching their interaction mechanisms and the possible recycling of these materials for environmental purposes and prevention of the health. We have used the FT-IR spectroscopy and DTA/TG studies to confirm the recyclability of these materials and the possible application in the industry to prevent the contamination.

### References

- del Hoyo, C. (2007). Applied Clay Science. 36, 103-121. Layered Double Hydroxides and human health: An overview.
- Valderrábano, M., Rodríguez-Cruz, S., del Hoyo, C., Sánchez-Martín, M.J. (2006). 4th International Workshop "Bioavailability of pollutants and soil remediation". 1, 5-6. Physicochemical study of the adsorption of pesticides by lignins.
- Volzone, C. (2007). Applied Clay Science. 36, 191-196. Retention of pollutant gases: Comparison between clay minerals and their modified products.