



Contribution ID: 149

Type: oral presentation

## A nuclear measurement technique for comparison of the washing machine detergent qualities used on the market

Friday 23 September 2011 12:25 (15 minutes)

Many washing machine detergents with different marks can easily be found on the market. In this study, we have investigated the cleaning qualities of the washing machine detergents which are used in homes applying a nuclear measurement technique. Small tissue pieces (3 x 3 cm) made in cotton, have been used as a reference material which is commonly used by individuals or by related commercial companies. For measurement and comparison of cleaning qualities of the washing machine detergents, the tissue pieces were first contaminated by plunging into the MIBI complex of  $^{99m}\text{Tc}$  radioactivity and waited about 30 min. Then, the tissue pieces were washed two times with pure water. It was clearly observed that the  $^{99m}\text{Tc}$  radioactivity has strongly incorporated into the structure of tissue pieces and could not be practically more removed from the tissue pieces by additional washing with pure water. Then, the tissue pieces were separately immersed into the different marks of diluted aqueous detergent solutions obtained heating to boiling point, waited 15 min, dried by a hair drier machine, and counted in a well NaI(Tl) detector counting system. Finally, it was observed that the detergents with different marks which are sold on the market expressed different cleaning qualities under the same experimental conditions applied in this study. We believe that this kind of quality measurement technique of washing machine detergents applying a nuclear measurement technique was first applied in the literature and this technique is, of course, very sensible respecting to other probable classical techniques applied in this sector. For this reason, we recommend this measurement technique to the detergent manufacturers for testing the quality controls of their products before to place on sale on the markets. It is also very interesting to note that the detergent qualities were not really correlated with their market prices.

**Author:** Mrs EKIM, Selen (Ege University)

**Co-authors:** Mr SAHSUVAR, Atakan (Ege University); Mrs CIGDEM, Cetin (Ege University); Mr MUTLU, Gök (Ege University); Mrs ÜNAK, Gülcan (Ege University); Mrs GÖZDE, Sarcan (Ege University); Prof. ÜNAK, Turan (Ege University)

**Presenter:** Mrs EKIM, Selen (Ege University)

**Session Classification:** Session 14

**Track Classification:** Radioanalytical Chemistry and Nanoparticles