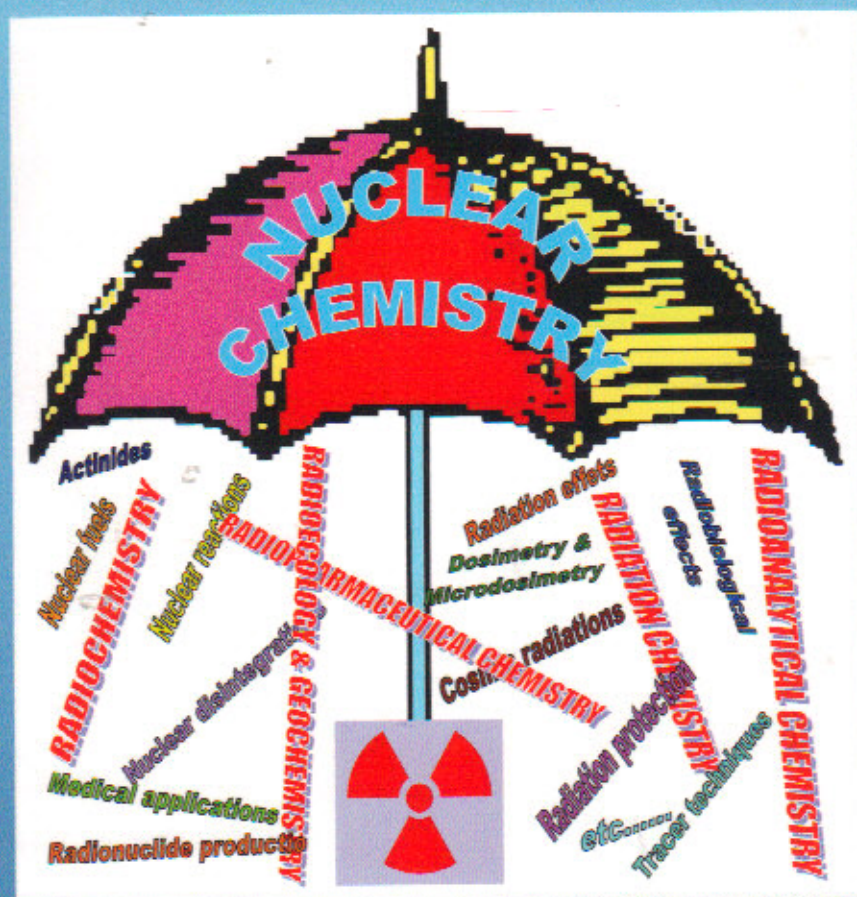


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A STUDY ON ELEMENTAL COMPOSITION OF TREE BARKS FOR USING IN ATMOSPHERIC POLLUTION MONITORING

Eliane Conceição dos SANTOS^{1,2}, Mitiko SAIKI¹

¹Instituto de Pesquisas Energéticas e Nucleares, IPEN-CNEN/SP, ²Instituto de Química, Universidade de São Paulo, São Paulo, Brazil, eliane_csantos@yahoo.com.br

The accumulation of atmospheric aerosols on tree barks has been widely studied as a tool for the identification of pollution sources¹ because bark analyses allow the monitoring of extensive geographical areas with easy and low cost of sampling. Since the elemental composition in barks depends on several parameters, the objective of this study was to compare elemental concentrations found in samples collected in tree trunks of different diameters, in opposite sides of a tree trunk and of distinct arboreal species, Tipuana (*Tipuana tipu*) and Sibipiruna (*Caesalpinia peltophoroides*). Bark samples were collected at a height of 1.5 m from the soil and were cleaned using a nylon tooth brush. For analysis, about 2 mm of the bark surface layer was removed using a Ti grater and it was ground in an agate mortar. The bark elemental composition was determined by Neutron Activation Analysis (NAA). Aliquots of samples and standards of elements irradiated with neutrons at the IEA-R1 nuclear research reactor were analyzed by gamma ray spectrometry. The quality control of the analytical results evaluated by analyzing INCT Virginia Tobacco Leaves certified reference material (CRM) presented values of $|z\text{-score}| \leq 2$, indicating that the procedure of NAA applied is suitable for the analyses. The comparison between the results showed increase of elemental accumulation with the trunk diameter or age of the tree for barks collected in heavy vehicular traffic area. However, for samples from low vehicular traffic area there was the decrease of concentrations indicating possible elemental leaching with the time. The barks collected in opposite sides of the tree trunk presented different elemental concentrations. Elemental concentrations in tree barks varied depending on the tree species, some elements in Tipuana species showed higher concentrations than those obtained for Sibipiruna probably due to the difference in bark porosity. As conclusion, parameters evaluated in this study must be considered in collecting tree bark samples for biomonitoring studies.

REFERENCES

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