

Book of Abstracts



ISEAC-37

37th International Symposium on Environmental Analytical Chemistry



DOUGLAS FIR (*PSEUDOTSUGA MENZIESII* MIRB.) BARK AND TREE RINGS AS BIO-INDICATORS

D.M. Marković¹, I.R. Milošević^{2,*}, G. Roglić³, D. Manojlović³, A. Milić³ and M. Veselinović⁴

¹ Singidunum University, Faculty of Applied Ecology
Lazarevački drum 13, Belgrade, Serbia

² University of Belgrade, Institute of Physics
Pregrevica 118, RS-11080 Zemum, Belgrade, Serbia

³ University of Belgrade, Faculty of Chemistry
Studentski trg 12-16, Belgrade, Serbia

⁴ University of Belgrade, Institute of Forestry
Kneza Višeslava 3, Belgrade, Serbia

* novovic@ipb.ac.rs

ABSTRACT

Trees of temperate regions usually form visible annual growth rings, which can be dated accurately. It is therefore possible to collect wood samples of different age and analyze their heavy metals content in order to get a chronological record of trace elements pollution in the tree's environment. Tree-rings and barks of Douglas-fir (*Pseudotsuga menziesii* Mirb.) from two sampling locations in Serbia are used as an indicator of environmental pollution. The first sampling location was Avala (the mountain located 16 km south-east of Belgrade), while the other was REIK Kolubara (the artificially established forest ecosystems on the surface coal mine). An ICP-OES spectrometer was used for concentration determination of Cd, Mn, Ni, Pb, Sr and Zn in Douglas-fir tree-rings and barks. By comparing the obtained values of the examined elements of Douglas fir tree-rings at both locations it can be seen that the concentrations of Cd, Mn, Pb and Sr are greater at Avala location while Ni and Zn are greater at Reik Kolubara location. In Douglas fir bark higher concentrations of Cd, Pb and Sr were measured at Avala, while the concentrations of Mn, Ni and Zn are higher at Reik Kolubara. Douglas fir bark contained higher concentrations of the examined elements than Douglas fir tree-rings.



LARCH (*LARIX EUROPAEA* LAM.) BARK AND TREE RINGS AS BIO-INDICATORS

I.R. Milošević^{1,*}, D.M. Marković², G. Roglić³, D. Manojlović³, A. Milić³ and D. Vilotić⁴

¹ University of Belgrade, Institute of Physics
Pregrevica 118, RS-11080 Zemum, Belgrade, Serbia

² Singidunum University, Faculty of Applied Ecology
Lazarevački drum 13, Belgrade, Serbia

³ University of Belgrade, Faculty of Chemistry
Studentski trg 12-16, Belgrade, Serbia

⁴ University of Belgrade, Institute of Forestry
Kneza Višeslava 3, Belgrade, Serbia

* novovic@ipb.ac.rs

ABSTRACT

The environment is under great influence from different sources. The use of vegetation provides the cheapest and simplest indicator for monitoring trace metal levels in the environment. By analysing metal content in bio-indicators such as lichen, moss, fern, leaves, etc., we can see an integral response to the pollution level in the region. Tree-ring analysis in contrast enables us to return to previous periods accurately and to understand trends of metal accumulation. As an indicator of environmental pollution we collected tree-rings and bark of larch (*Larix europaea* Lam.) from two sampling locations in Serbia. The first sampling location was Avala (the mountain located 16 km south-east of Belgrade), while the other was REIK Kolubara (the wood samples were collected from artificially established forest ecosystems on the surface coal mine). An ICP-OES spectrometer was used for concentration determination of Cd, Mn, Ni, Pb, Sr and Zn in larch tree-rings and barks. Instrumental conditions were optimized to obtain sufficient sensitivity and precision. By comparing the obtained values of the examined elements of larch tree-rings at both locations it can be seen that the concentrations of Cd, Mn, Ni, Pb and Sr are greater at Avala location while Zn are greater at Reik Kolubara location. Measured concentrations in larch bark for all examined elements are higher at Avala location than at location Reik Kolubara. Larch bark contained higher concentrations of the examined elements than larch tree-rings in almost every case.