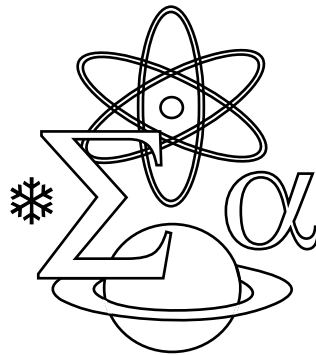


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MATURITY OF ORGANIC MATTER BY VITRINITE REFLECTANCE IN THE PERI-ADRIATIC DEPRESSION

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ABSTRACT

Consisting of Miocene to Pliocene deposits, two levels of natural gas pools were discovered in the Peri-Adriatic Depression: i) one level located in the Pliocene deposits, and ii) a second level belonging to Tortonian–Messinian sandstone bodies, named the “Divjaka suit”. Correlated with indicators such as pyrolytic (Rock-eval data) and hydrocarbon composition of natural gas, measurement and evaluations of vitrinite reflectance, an appropriate tool helping to define both the stages of maturity of organic matter and the type of hydrocarbon generated, were undertaken. Interpretation of these geochemical indicators helped distinguish three sequences of hydrocarbon generation of methane gas: i) biogenic gas of Pliocene deposits, ii) mixed gas (biogenic and thermogenic) occurring from Tortonian to Pliocene deposits, and iii) thermogenic gas of Langhian–Serravallian sedimentary section origin.

Keywords: depression, cuttings, polishing, hydrocarbon (HC) gas, dry gas, liptinite, vitrinite, maturity

STUDY OF COMBINATION OF CAPACITIES FOR SOME INBRED LINES OF MAIZE

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ABSTRACT

In the process of genetic improvement of maize hybrids, achievement of high production capacity is a constant problem. The present paper provides information on a study into combination ability (production capacity) of 15 maize hybrids provided by the Agriculture University of Tirana, Albania, under the eco-climatic conditions prevailing in Istog, Kosovo. The tester-cross method was applied and results of interest were obtained after testing 106 lines. The outcomes show that the diversity of production capacity of hybrid combinations of crossed lines depends upon their genetic composition. Some of the hybrid combinations are of interest in agronomy and further work will be undertaken as a means to address new hybrid formulas.

Key words: combination capacity, inbred lines, hybrid combinations

ATMOSPHERIC PATTERNS AND PREDICTING HEAVY RAINFALL IN ALBANIA

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ABSTRACT

Albania is often affected by heavy rainfall that sometimes causes severe flooding with consequential damage to the economy. Thus, an accurate short-range forecast of heavy rainfall is essential. This paper provides information on atmospheric patterns of extreme rainfall days in Albania over more than 15 years. Distinct cases of normal and extreme rains were recorded based upon thresholds applied in 36 meteorological stations that characterized different local precipitation regimes. Sixty-one cases of 24-hour rainfall with rainfall larger than the threshold were identified. Classification of these cases into six groups was undertaken according to similarities among the atmospheric patterns. A geopotential height of 500 hPa provided an effective forecasting tool for heavy rainfall.

Keywords: extreme rainfall, atmospheric patterns, geopotential field, cut-off, positively tilted trough, threshold

ADSORPTION AND RECOVERY OF RHODAMINE WT FROM ACTIVATED CARBON USED IN WATER SYSTEM STUDIES

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ABSTRACT

This paper aims at determining the adsorption and degree of recovery from bags of activated carbon of Rhodamine WT, a fluorescent tracer used in aquatic environmental studies. Traces of the dye are fixed strongly to the surface of the carbon grains. Activated carbon is here applied in different water systems studies comprising fluorescent tracer experiments. Carbon bags were first used in Albania in 2002 in karst system studies at Mali me Gropa and in studies of the Ohrid–Prespa system (and again in 2007). Adsorbed tracers can be extracted and analysed from carbon bags, and adsorption and degree of recovery is here estimated from Rhodamine WT fluorescence intensity, both in standard solutions and extracts. The carbon extracts detected extremely low levels of RWT normally undetectable directly from water samples.

Keywords: artificial tracer, fluorescence intensity (I_F), synchronous scan, rhodamine WT (RWT), activated carbon.

A REVIEW OF SOLID INORGANIC PHOTOVOLTAICS AND THERMOELECTRICS

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ABSTRACT

This paper provides an overview of recent progress made in the area of inorganic solid compounds (materials), their methods of syntheses and their structural characteristics with regard to increasing the efficiency of photovoltaic or thermoelectric applications, or both. Although optimization of their efficiency is developed in two parallel technologies—thin layer and crystalline materials—this paper emphasizes their structural characteristics related to physical properties more than the fabrication technologies themselves. To the increasingly extensive range of the existing elements and compounds (natural or synthetically produced) with the required properties, another group of ternary and quaternary mixed valence inorganic compounds from the elements of the III, VI and VII main groups can be added due to their promising structural characteristics and preliminary data requiring further measurements and applications in this field.

Keywords: photovoltaic and thermoelectric efficiency, inorganic solid materials, sulphosalts, mixed valence compounds, nanowire crystals, layered structures

PREVALENCE OF HEPATITIS B SURFACE ANTIGEN IN ALBANIAN BLOOD DONORS

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ABSTRACT

Hepatitis B is a virus normally transmitted through blood and blood products. The prevalence of hepatitis B surface antigen (HBsAg) was tested among 21,612 Albanian healthy blood donors using third generation test kits. The prevalence of the antigen was higher in family blood donors than among other voluntary donors, though less so than among commercial blood donors. Establishing a panel of regular voluntary blood donors and improving the processing of blood screening methods would have a great effect in providing access to safe blood use.

Keywords: hepatitis B virus, voluntary non-remunerated blood donors, family replacement blood donors, autologous blood donors, commercial blood donors

CONTAMINATION WITH *LISTERIA MONOCYTOGENES* OF MUSSELS PRODUCED IN BUTRINTI (BUTHROTUM) LAGOON

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ABSTRACT

In 2009, 98 samples of live bivalve mussels *Mytilus galloprovincialis* were collected from three sampling points in Butrinti Lagoon and tested for the presence of *Listeria monocytogenes*. The mean incidence of the pathogen was 10.9% with analysis provided for three seasons spring, summer and autumn. The highest level of incidence was recorded in spring (13.5%) followed by summer (7%) and autumn (6.2%). The most contaminated area was the northern part of the lagoon, where 19% of the samples were positive. The results are to be addressed to the relevant national authorities.

Keywords: control, mussel, *Listeria monocytogenes*, Butrinti

TURNING WASTE INTO HIGHLY VALUABLE MATERIAL: CLINKER-FREE CEMENTS BASED ON CHEMICAL ACTIVATION OF SLAG

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ABSTRACT

In the present study, the possibility to develop clinker-free cements (binders) at low energy cost from waste material granulated blast furnace slag by means of chemical activation was investigated. The properties of the resulting binders, similar to those obtained with common clinker-based cements depended strongly on both slag and activator characteristics, while the optimization procedure to obtain high quality clinker-free cements for industrial purposes could be performed either through slag, or activator, or both at the same time. Relatively small variations in activator content caused considerable alteration in the binder properties. Application outcomes show that the most suitable binder utilization available incorporated the activator in powder form.

Keywords: waste, ground granulated blast furnace slag, clinker-free cement, chemical activation

EFFICIENT ALGORITHMS FOR PRESERVING ENERGY AT NODES OF A NETWORK

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ABSTRACT

Introduced in different topologies and characterized by simplicity of application, averaging algorithms are of great interest for the researchers. Simulated behaviour of three algorithms—Standard, Broadcast and Geographic Gossip—are applied here in two topologies: Ring and Random Graph. Both simple and robust, these algorithms distribute information from one node to another, sending a few messages and elaborating only the average and the sum of the initial values at nodes. Convergence even in the presence of nodes that leave the network makes the algorithms robust. This paper aims at finding the shortest way of sending information from one network node to another, while at the same time preserving the energy, consequently enabling longer network lifetime. For shorter time convergence purposes, Geographic Gossip introduced localization of nodes by means of GPS, despite the cost of this network. Averaging algorithms are compared by means of simulation results.

Keywords: averaging algorithms, energy, simulations

EVALUATION OF EVAPOTRANSPIRATION AND ITS COMPONENTS IN SOME REGIONS OF ALBANIA

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ABSTRACT

Evapotranspiration has a great impact on climate, and its evaluation is of a great importance. In Albania, the mountainous relief, typical Mediterranean climate and its hydrographical system, which together characterize the country well, all effect evapotranspiration. This paper aims to provide some information about general evaluation of evapotranspiration and its components in some regions in the country. In this investigation, two different model methods were used to estimate ET_o , namely a meteorological data FAO-56 Penman Monteith and a standardized ASCE Penman Monteith. Other methods, such as Thornthweit, Konstandinov, water balance, were also applied and the pluviometric deficit was estimated to evaluate real evapotranspiration. Evaporation was here evaluated by computing its principal components, including potential or reference evapotranspiration (E_0), real evapotranspiration (E_r) and pluviometric deficit (ΔE), for field, hilly and mountain areas.

Keywords: evapotranspiration, real evapotranspiration, deficit evapotranspiration, FAO 56-PM

IN VITRO RAPID REGENERATION OF PLANTLETS OF WILD MAHALEB CHERRY (*PRUNUS MAHALEB* L.)

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ABSTRACT

Shoot tips of *Prunus mahaleb* L., promising as rootstocks for sweet cherry cultivars, were submitted to *in vitro* culture to test if micropropagation could be used for their rapid production. Two different media were applied containing the following: a) MS macronutrients, micronutrients, vitamins and phytohormones 0.3 mg l⁻¹ BAP, 0.1 mg l⁻¹ IBA, 0.3 mg l⁻¹ GA₃, and b) LP macronutrients, micronutrients, vitamins and phytohormones 0.25 mg l⁻¹ BAP, 0.6 mg l⁻¹ IBA, 0.3 mg l⁻¹ GA₃, 30 g l⁻¹ sucrose and 7 g l⁻¹ agar. Once multiplication was achieved on these media, medium containing MS macronutrients, micronutrients and vitamins, 0.7 mg l⁻¹ BAP, 0.01 mg l⁻¹ NAA, 0.1 mg l⁻¹ GA₃ was found to provide the best results. Varying from 10–90%, the rooting percentages of plantlets depended on NAA concentration in the rooting media.

Keywords: micropropagation, shoot tips, nutrient medium, phytohormones, rooting stage

THE IMPACT OF SEED AND VEGETATIVE ROOTSTOCKS ON THE INDICATORS OF PEAR SAPLINGS

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ABSTRACT

Progressive developments have been currently met in Albanian arboriculture. In addition, great efforts have been made to establish linkages between Albanian and regional arboriculture together with technological developments in the area of cultivation, planting structure, sapling market, vegetative rootstocks, etc. Abate Fetel and Gientil Bianca, two rootstocks with vegetative seeds and pear cultivar have been investigated by the Department of Horticulture of the Agricultural University of Tirana for stimulation of production and the spreading of the sapling of the pear on the vegetative rootstocks purposes. The number of plants / unit of surface and the economic effectiveness in the farm would prospectively increase. Results showed that the application of EMA, a vegetative clone, provided high planting indicators (87.33% and 92%) and saplings characterized by qualitative indicators (92.6% and 94.2%). The cost of production is 0.5€/sapling.

Keywords: vegetative rootstock, clone, potential reserve, EMA (East Malling Anger), qualitative and quantitative indicators, national standard.

POLYCYCLIC AROMATIC HYDROCARBONS IN FISH SPECIES FROM LAKE OHRID

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ABSTRACT

Polycyclic Aromatic Hydrocarbons (PAH) are widespread environmental pollutants originating from natural sources and formed during incomplete combustion of organic matter. Different parts of the environment show great variability in the occurrence of PAHs. The biota of Lake Ohrid is of great interest as it provides valuable data concerning correlations between accumulation levels of heavy PAHs and age of individual fish analyzed. Analysis of muscle samples from different species found that bleak contained the highest concentrations of PAH. This unique ecosystem can be considered as affected by local anthropogenic factors.

Keywords: Ohrid Lake, PAHs, freshwater fishes, Ohrid trout

GEOGRAPHIC INFORMATION SYSTEM DATA INTEGRATION AND WEB GIS DEVELOPMENT IN TIRANA MUNICIPALITY

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ABSTRACT

A Geographic Information System (GIS) is of great importance to provision and use of spatial data in local governments. For the Municipality of Tirana, once GIS becomes properly adapted for the web, it can be used to capture, integrate, combine, maintain, query and analyse (spatial) data fulfilling at the same time the needs of citizens and businesses. Web GIS supports, facilitates and accelerates the working process. An appropriate combination of existing data, with all the various types of information, including novel types, would be generated through GIS. This paper aims to provide information on the integration of geographic data from the existing GIS system in the municipality, helping the development of an optimized Web GIS. In addition, the paper aims to provide information on the following departments: Urban Planning, Engineering Network, Transportation and Asset Management.

Keywords: Geographic Information System, Web GIS, data integration, open source, spatial data, PostgreSQL

SITUATION AND PERSPECTIVE OF ALBANIA'S TEXTILE, GARMENT AND FOOTWEAR INDUSTRIES

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ABSTRACT

In the Albanian economy, from 1960 to 1990, the two main industries were the textile and garment industry and the leather and shoes industry. Previously, the enterprises in these industries provided a range of added value chain products from raw materials (fibres) to ready-made products (fabrics, garments, rugs, upholstery). Since the privatization process, which started in 1990, the production activities have been focused on ordered-material production (fully fashioned mode), a focal point for Albanian exports. In the country's economy, the leading sector is still the garment industry due to the great number of employees, though it ranks in fourth place of enterprise production, following the food, wood and furniture, and the metallurgic industries.

Keywords: textile and garment industry; companies' location; number of employees

BACTERIAL FLORA ISOLATED IN BURNS WARD AT UNIVERSITY HOSPITAL CENTRE, TIRANA, ALBANIA

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ABSTRACT

The present paper evaluates bacteriological examinations of burns wound patients treated at University Hospital Centre, Tirana. From January–June 2011, samples from wounds of 16 Intensive Care Unit (ICU) patients and 225 burns ward patients were collected. Information on antibiotic resistance of the strains isolated is also provided. Among the microbes identified, *Acinetobacter sp.* was predominant, while *Pseudomonas* and *Staphylococci* were also found to be common. The level of antimicrobial resistance was high, a typical feature of hospital strains.

Keywords: wounds, samples, pattern, strain