

Srpsko geološko društvo

**Zbornik apstrakata
XVIII Kongres geologa Srbije**



**18 КОНГРЕС
ГЕОЛОГА СРБИЈЕ**

**Book of abstracts
of the XVIII Serbian Geological Congress**

**GEOLOGIJA REŠAVA PROBLEME
GEOLOGY SOLVES THE PROBLEMS**

Divčibare, 01-04. jun 2022.

XVIII Kongres geologa Srbije: Zbornik apstrakata

(Nacionalni kongres sa međunarodnim učešćem)

XVIII Serbian Geological Congress: Book of abstracts

(National Congress with International Participation)

Divčibare, 01-04.06.2022.

Organizator / Organised by

Srpsko geološko društvo / Serbian Geological Society

Suorganizator / Co-organised by

Univerzitet u Beogradu – Rudarsko-geološki fakultet /
University of Belgrade, Faculty of Mining and Geology

Za izdavača / For the Publisher

Vladimir Simić

Predsednik Srpskog geološkog društva / President of the Serbian Geological Society

Glavni urednik / Editor-in-chief

Bojan Kostić

Uređivački odbor / Editorial Board

Danica Srećković-Batočanin, Nevenka Đerić, Dragoljub Bajić

Tehnička priprema / Technical Preparation

Bojan Kostić, Zoran Miladinović, Ana Zeković, Marija Petrović

Izdavač / Publisher

Srpsko geološko društvo / Serbian Geological Society

Kamenička 6, P.Box 227, 11001, Belgrade, Serbia

<http://www.sgd.rs>; e-mail: office@sgd.rs

ISBN-978-86-86053-23-7

Napomena: *Autori su odgovorni za sadržaj i kvalitet svojih saopštenja*

Note: *The authors are responsible for the content and quality of their contributions*

Organizacioni odbor / Organizing Committee

Vladimir Simić (predsednik), Danica Srećković-Batočanin (potpredsednik), Dragoljub Bajić (sekretar), Zoran Miladinović (sekretar), Nevenka Đerić, Nenad Marić, Predrag Cvijić, Danijela Božić, Sonja Đokanović, Bojan Kostić, Nikoleta Aleksić, Stefan Petrović, Nemanja Krstekanić, Maja Maleš, Marija Vuletić, Natalija Batočanin

Naučni odbor / Scientific Committee

Vladimir Simić, Danica Srećković Batočanin, Nevenka Đerić, Dragana Životić, Rade Jelenković, Aleksandar Kostić, Uroš Đurić, Miloš Marjanović, Alena Zdravković, Suzana Erić, Meri Ganić, Uroš Stojadinović, Katarina Bogičević, Dejan Prelević, Jana Štrbački, Vesna Ristić-Vakanjac, Dušan Polomčić, Vesna Cvetkov, Nevena Andrić-Tomašević, Spomenko Mihajlović, Aleksandra Maran-Stevanović, Darko Spahić, Slobodan Radusinović, Lidija Galović, Kristina Šarić, Vesna Matović

Volonteri studenti / Students volunteers

Marija Petrović, Filip Arnaut

Sponzori / Sponsors

Ministarstvo prosvete, nauke i tehnološkog razvoja
Univerzitet u Beogradu – Rudarsko-geološki fakultet
"Jelen Do" Lime & Aggregates - Carmeuse Group
Rudarski institut d.o.o. Beograd
IBIS-INŽENJERING d.o.o. Banja Luka
Geoing Group
GeoProspect d.o.o.
VODAVODA
Knjaz Miloš
Kompanija Simex

PLENARNA PREDAVANJA / PLENARY LECTURES

Zoran Stevanović, Podzemne vode – ključni resurs budućnosti i najbolji indikator stanja životne sredine.

Zoran Stevanović, Groundwater – Key Resource for the Future and Best Indicator of Environmental Status

Oleg Mandić, Stratigrafija i paleogeografija neogena južnog Panonskog bazena.

Oleg Mandić, Neogene stratigraphy and paleogeography of the southern Pannonian basin.

Ivan Dulić, M. Dunčić, G. Bogićević, V. Gajić, S. Teslić, P. Cvijić, J. Sovilj, S. Marjanović, R. Ahmetzjanov, Regionalni naftno-geološki projekti na prostoru Panonskog basena, Dinarida i Karpatobalkanida.

Ivan Dulić, M. Dunčić, G. Bogićević, V. Gajić, S. Teslić, P. Cvijić, J. Sovilj, S. Marjanović, R. Ahmetzjanov, Regional oil and geological projects in the Pannonian Basin, Dinarides and Carpathian Balkan.

PREDAVANJA PO POZIVU / INVITED LECTURES

Nevena Andrić-Tomašević, Dinamika litosfere duž severoistočnog oboda Adrije zabeležena u sedimentnim basenima i magmatskim produktima

Nevena Andrić-Tomašević, Quantifying lithospheric dynamics along the north-eastern margin of Adria using magmatic and sedimentary signals

Dragoljub Bajić, Rešavanje problema odvodnjavanja primenom „fuzzy MCDM“ metoda pri inženjersko-geološkim istraživanjima

Dragoljub Bajić, Solving dewatering problems using fuzzy MCDM Methods for Engineering-geological Surveys

Katarina Brađić Milinović, Otoliti *in situ* sa teritorije Srbije (stratigrafski, paleoekološki i paleogeografski značaj)

Katarina Brađić Milinović, Otoliths *in situ* from Serbia (stratigraphic, paleoecological and paleogeographical significance)

Miloš Velojić, Geologija hidrotermalnog Cu-Au sistema Čukaru Peki

Miloš Velojić, Geology of the Čukaru Peki hydrothermal *Cu-Au* system

Violeta Gajić, Sedimentologija gornje krede jednog dela Unutrašnjih Dinarida (zapadna Srbija)

Violeta Gajić, Sedimentology of the Upper Cretaceous within a part of the Internal Dinarides (West Serbia)

Dragana Đurić, Primena SAR interferometrije za određivanje koseizmičkih deformacija: trendovi i dostignuća

Dragana Đurić, SAR interferometry for coseismic displacement determination: trends and achievements

Miloš Marjanović, Analiza odrona u stenskim kosinama: savremeni pristupi

Miloš Marjanović, Rockfalls analysis in rock slopes: state-of-the-art approaches

Aleksandar Pačevski, Nov pristup proučavanju tekstura minerala značajnih za istraživanje rudnih ležišta

Aleksandar Pačevski, New approaches to the study of mineral textures significant for ore deposits exploration

Dejan Radivojević, Evolucija jugoistočnog dela Panonskog basena i njene implikacije

Dejan Radivojević, Evolution of Southeastern part of the Pannonian Basin and its implications

Ranka Stanković, Harmonizacija geopodataka korišćenjem povezanih otvorenih podataka

Ranka Stanković, Harmonization of Geodata Using Linked Open Data

SADRŽAJ / CONTENT

KORELACIJA MAGNETNOG SUSCEPTIBILITETA I SADRŽAJA METALA U FLOTACIJSKOM JALLOVIŠTU	
Filip Abramović, Vesna Cvetkov, Aco Ilić, Dragana Životić	23
CORRELATION OF MAGNETIC SUSCEPTIBILITY AND CONTENT OF METAL IN FLOTATION TAILINGS	
Filip Abramović, Vesna Cvetkov, Aco Ilić, Dragana Životić	24
GEOLOŠKE KARAKTERISTIKE LEŽIŠTA ARHITEKTONSKO-GRAĐEVINSKOG (UKRASNOG) KAMENA "VINIĆI"-BJELOPAVLICI	
Vasilije Abramović, Darko Božović	25
GEOLOGICAL CHARACTERISTICS OF DIMENSION STONE FROM THE "VINIĆI" DEPOSIT - BJELOPAVLICI	
Vasilije Abramović, Darko Božović	26
NAFTNO-MATIČNE STENE I NJIHOVA ZRELOST U PODRUČJU BAŠAIDA (PANONSKI BASEN)	
Nikoleta Aleksić, Aleksandar Kostić	27
PETROLUM SOURCE ROCKS AND THEIR MATURITY IN THE AREA OF BAŠIDA (PANNONIAN BASIN)	
Nikoleta Aleksić, Aleksandar Kostić	28
FORMACIONA ANALIZA GORNJOMIOCENSKO-DONJOPLOCENSKIH SEDIMENATA PODRUČJA JUGOISTOČNOG BANATA	
Filip Anđelković, Dejan Radivojević	29
FORMATIONAL ANALYSIS OF UPPER MIOCENE-LOWER PLOCENE SEDIMENT IN THE SOUTHEASTERN BANAT AREA	
Filip Anđelković, Dejan Radivojević	30
KASNA FAZA EVOLUCIJE DINARIDA ZABELEŽENA U SEDIMENTNIM BASENIMA I MAGMATSKIM PRODUKTIMA	
Nevena Andrić -Tomašević	31
LATE-STAGE EVOLUTION OF THE DINARIDES RECORDED IN SEDIMENTARY BASINS AND MAGMATIC PRODUCTS	
Nevena Andrić -Tomašević	32
PRIMENA JEDNOSTAVNIH METODA PREDVIĐANJA NA PODATKE VERTIKALNOG ELEKTROMETRIJSKOG SONDIRANJA	
Filip Arnaut, Vesna Cvetkov, Dragana Đurić	33
APPLICATION OF SIMPLE FORECASTING METHODS ON VERTICAL ELECTRICAL SOUNDING DATA	
Filip Arnaut, Vesna Cvetkov, Dragana Đurić	34
PROJEKAT RAZVOJA MODULARNOG ROBOTSKOG SISTEMA ZA RUDARENJE (ROBOMINERS) I PERSPEKTIVA PRIMENE U SRBIJI	
Nebojša Atanacković, Vladimir Živanović, Veselin Dragišić, Sava Magazinović, Predrag Mijatović	35
PROJECT OF DEVELOPMENT OF MODULAR ROBOTIC MINING SYSTEM (ROBOMINERS) AND PERSPECTIVE OF APPLICATION IN SERBIA	
Nebojša Atanacković, Vladimir Živanović, Veselin Dragišić, Sava Magazinović, Predrag Mijatović	36

HIDROGEOLOGIJA LEŽIŠTA BAKRA I ZLATA ČUKARU PEKI – OD ISTRAŽIVANJA DO EKSPLOATACIJE

Nebojša Atanacković, Vladimir Živanović, Veselin Dragišić, Jelena Davidović.....37

HYDROGEOLOGY OF THE ČUKARU PEKI COPPER-GOLD DEPOSIT – FROM EXPLORATION TO EXPLOITATION

Nebojša Atanacković, Vladimir Živanović, Veselin Dragišić, Jelena Davidović.....38

NOV PRISTUP POSREDNOG DEFINISANJA MODULA DEFORMACIJA

Predrag Babić, Uroš Mirković, Slobodan Radovanović39

MATEMATIKA KAO ALAT ZA REŠAVANJE PROBLEMA PRI EKSPLOATACIJI LEŽIŠTA MINERALNIH SIROVINA

Sanja Bajić, Dragoljub Bajić, Branko Gluščević40

MATHEMATICS AS A TOOL FOR SOLVING PROBLEMS IN THE EXPLOITATION OF MINERAL DEPOSITS

Sanja Bajić, Dragoljub Bajić, Branko Gluščević41

REŠAVANJE PROBLEMA ODVODNJAVANJA PRIMENOM „FUZZY-MCDM“ METODA PRI INŽENJERSKO-GEOLOŠKIM ISTRAŽIVANJIMA

Dragoljub Bajić42

SOLVING DEWATERING PROBLEMS USING FUZZY MCDM METHODS FOR ENGINEERING-GEOLOGICAL SURVEYS

Dragoljub Bajić43

KINEMATSKA EVOLUCIJA MEZOZOJSKIH SEDIMENATA PLATOJA TARE I ZAOVINSKOG JEZERA (ZAPADNA SRBIJA)

Miljan Barjaktarović, Tatjana Vrtikapa, Marica Knežević44

KINEMATIC EVOLUTION OF MESOZOIC SEDIMENTS OF THE TARA PLATEAU AND LAKE ZAOVINE (WESTERN SERBIA)

Miljan Barjaktarović, Tatjana Vrtikapa, Marica Knežević45

O KONTINENTALNIM KARBONATIMA: BIGAR VS. TRAVERTIN

Natalija Batočanin, Ivana Carević, Sanja Manojlović.....46

ABOUT TERRESTRIAL CARBONATES: CALCAREOUS TUFA VS. TRAVERTINE

Natalija Batočanin, Ivana Carević, Sanja Manojlović.....47

HIDROGEOLOŠKE KARAKTERISTIKE TERMOMINERALNE VODE IZVORIŠTA „SEDRA“ KOD BREZE I MOGUĆNOST PRIMJENE

Sabit Begić, Ćazim Šarić, Miodrag Banješević & Marija Kukavica.....48

HYDROGEOLOGICAL CHARACTERISTICS OF THERMOMINERAL WATER OF THE SOURCE "SEDRA" AT BREZA AND POSSIBILITY OF UTILISATION

Sabit Begić, Ćazim Šarić, Miodrag Banješević & Marija Kukavica.....49

EVALUATION OF THE GEOLOGICAL CONTEXT FOR NUCLEAR WASTE DISPOSAL OPTIONS IN SERBIA

Koen Beerten, Koen Lenie, Petar Stejić, Dalibor Arbutina.....50

THERMAL AND SUBTHERMAL KARST WATER IN BULGARIA

Aleksey Benderev, Sava Kolev, Mila Trayanova, Aglaida Toteva.....51

LATE MIOCEN VOLCANISM IN THE TIKVES VALLEY-NORTH MACEDONIA (MRZEN LOCALITY)

Ivan Boev52

LATE MIOCEN VOLCANISM IN THE TIKVES VALLEY-NORTH MACEDONIA (MRZEN LOCALITY)

Ivan Boev

Faculty of Natural and Technical Sciences, University "Goce Delčev", Štip, 2000 Republic of North
Macedonia

E-mail: ivan.boev@ugd.edu.mk

Key words: Late Miocene volcanism, strontium isotope, neodymium isotope

Late Miocene volcanism in the Tikves valley (locality MRZEN locality) is characterized by the appearance of volcanic rocks that also mark the beginning of volcanic activity in the southern parts of the Republic of North Macedonia. This volcanism appears on the transversal tectonic structures with E-W extension that are a consequence of the extension occurring in this region in the period of about 10 MA (in the area of Mrzen, 8.32 MA) and which is a direct consequence of the subduction processes in the Aegean region.

Detailed microscopic examinations of 5 samples of volcanic rocks show that they have a typical porphyritic structure, while the texture is trachytic. Phenocrysts that have idiomorphic forms are represented by: olivine, clinopyroxene, orthopyroxene, plagioclase and magnetite. In some places there are alterations of phenocrysts to: iddingsite (mixture of smectite-chlorite-goethite), clay and/or zeolites, and calcite. The ground mass is hypocrySTALLINE and in places it is vitreous.

The chemical and geochemical characteristics of volcanic rocks indicate that they are rocks with an intermediate character, but in the modal composition of the rock olivine as phenocrystals appears, and, based on this, these rocks could be defined as alkaline basalts. The content of strontium isotopes $^{87}\text{Sr}/^{86}\text{Sr}$ ranges in the interval of 0.706671-0.706795, while neodymium isotopes $^{143}\text{Nd}/^{144}\text{Nd}$ it ranges in the interval of 0.512441-0.512472. Strontium isotopes ($^{87}\text{Sr}/^{86}\text{Sr}$) clearly indicate the origin of the primary magma from which these volcanic rocks differentiated. The source of the magma is unambiguously in the upper mantle and therefore these rocks differ from the Pliocene volcanism of Kozuf Mountain where strontium isotopes are in the interval of 0.7080-0.7090 and the source of the magmas is located in the upper part of the border area of the upper mantle and the lower parts of the continental crust.