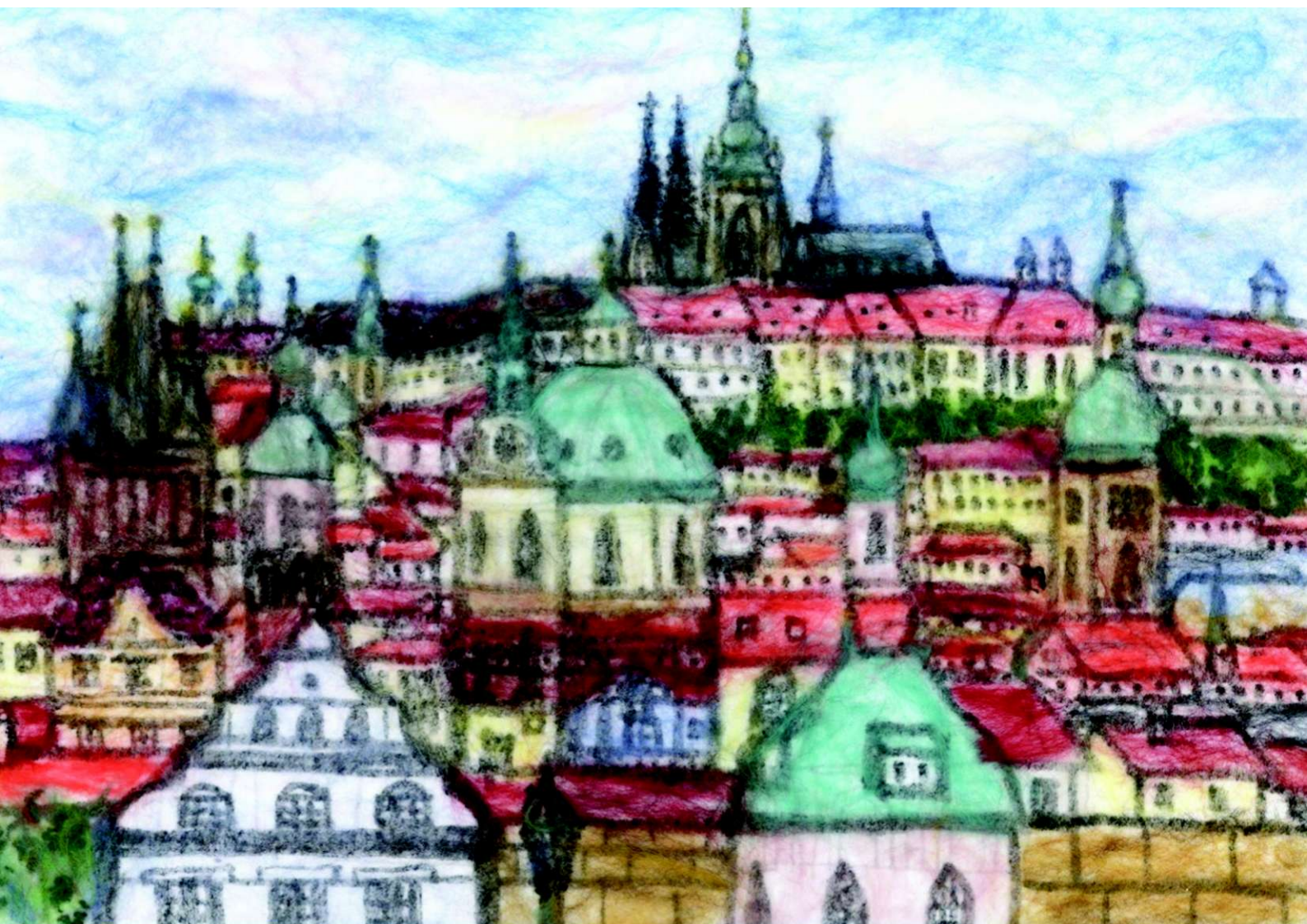


27th International Meeting on Organic Geochemistry

IMOG 2015 Prague

Prague, September 13 - 18, 2015

BOOK OF ABSTRACTS



Sessions - Orals and Posters

The abstracts are arranged in topical sessions encoded in the following way:

A - Plenary Sessions

B - Orals - Petroleum

C - Orals - Biogeochemistry and Paleoenvironment

D - POSTER SESSIONS - Petroleum Geochemistry

D01 - Petroleum systems

D02 - Generation, Expulsion and Migration

D03 - Unconventional resources

D04 - Gas geochemistry

D05 - Reservoir geochemistry

D06 - Biodegradation

D07 - Sulfur geochemistry

E - POSTER SESSIONS - Biogeochemistry

E08 - Earth and life history

E09 - Benthic processes

E10 - Soil biogeochemistry

E11 - Paleoclimate and Paleoenvironment

E12 - Analytical methods

In each session the abstracts are sorted and numbered alphabetically by the first author.

You may use search tools to find the names and titles of the abstracts.

C29 - H.M. Talbot, J. Bischoff, M.E. Collinson, R.D. Pancost:
Remarkable preservation of polyfunctionalised hopanoids in the Eocene Cobham lignite (UK)

C30 - B.E. van Dongen, R.B. Sparkes, A. Dogrul Selver, J. Bischoff, O. Gustafsson, I.P. Semiletov, J.E. Vonk, R.G.M. Spencer, H.M. Talbot:
Using Microbial Biomarker Signature from Permafrost Environments as Markers for Terrestrial Transport Across the East Siberian Arctic Shelf

C31 - A. Vinçon-Laugier, V. Grossi, M. Pacton, C. Cravo-Laureau:
Influence of growth substrate on the ether lipid composition of mesophilic anaerobic bacteria

C32 - Y. Weber, E. Hopmans, J.S. Sinninghe-Damste, C.J. Schubert, M. Simona, M.F. Lehmann, H. Niemann:
Aquatic in situ production of branched GDGTs in lakes: Water column distribution and stable isotopic composition of novel isomers

D - POSTER SESSIONS - Petroleum Geochemistry

D01 - Poster session - Petroleum systems

D0101 - Tesfamariam B. Abay, Dag A. Karlsen, Jon H. Pedersen, Snorre Olaussen, Kristian Backer-Owe:

Petroleum geochemistry of the Agardhfjellet Formation and the Effect of Weathering on Organic Matter: A comparison of outcrop- and fresh deep core-samples concerning TOC, Rock-Eval, GC-FID and GC-MS data

D0102 - Hussain Akbar, Rita Andriany, Awatif Al-Khamesh:
The mysteries of Triple Source Rock in Kuwait

D0103 - Salem AlAli, Awatif AlKhamiss:
A review of Kuwait's petroleum systems integrating petroleum geochemistry and basin modeling

D0104 - Kauthar M. Al-Hadhrami, Mohammed Al-Ghammari, Cees van der Land, Martin Jones:
Oil Families and their potential sources in the Natih and 'Tuwaiq' petroleum systems of NW Oman

D0105 - Rita Andriany, Awatif Al-Khamiss, Mubarak Al-Hajeri: The viscous oil of the youngest petroleum system in Kuwait - From WHERE?

D0106 - Bahman K. Fatma, Abdullah H. Fowzia, Alimi H.:
Organic Geochemical and Petrographical Study of Lower Cretaceous Makhul Formation Source Rocks in Kuwait

D0108 - Anis Belhaj Mohamed, Moncef Saidi, Mohamed Soussi:
Geochemistry of Paleozoic Source Rocks from the Chotts Basin, Southern Tunisia

D0109 - Anis Belhaj Mohamed, Moncef Saidi, Ibrahim Bouazizi, Monia BenJrad:
Mesozoic and Cenozoic Oil families in Central and Northern Tunisia: Oil-Oil and Oil-Source
Rock Correlation

D0110 - Wojciech Bielen, Marek Janiga, Malgorzata Kania, Maria Kierat, Irena Matyasik:
Determination of aromatic steroids and their use in geochemical interpretation

D0111 - Jaime Cesar, Kliti Grice, Andrew Murray, Ines Melendez:
Novel correlation approaches for source rock discrimination in the Dampier sub-Basin, WA

D0112 - Svenja Erdmann, Jos Pragt, Ansgar Cartellieri, Stefan Wessling:
Downhole Fluid Analysis and Sampling in a Logging-While-Drilling Environment - New
Frontiers to Explore

D0113 - Elena A. Fursenko, Vladimir A. Kashirtsev, Olga N. Chalaya, Anatoliy K. Golovko,
Galina S. Pevneva, Natalia P. Shevchenko, Iraida N. Zueva:
Naphthene oils of Siberia (conditions of formation, compositional features and characteristics,
and prospects of utilization)

D0114 - Anatoly K. Golovko, Aleksey E. Kontorovich, Galina S. Pevneva:
Alkylarenes in Crude Oils from Deposits of Different Ages

D0115 - Sidney G Lima, Marcio S Rocha, Lorena T G de Almeida, Andrenilton S. Ferreira,
Francisco J S Oliveira, Jose Arimateia Dantas Lopes, Ramses Capilla, Igor V. A. F. de Souza:
Use of P-cyclodextrin in the enrichment of saturated and aromatic fractions of oil Sergipe-
Alagoas Basin

D0116 - Sidney G Lima, Lorena T G Almeida, Lucinaldo S Silva, Fernando M Borges,
Antonia Maria G L Cito, Giovanni M. Cioccaro, Ramses Capilla, Igor V. A. F. de Souza:
Neutral and Acids biomarkers of Cretaceous Rocks of the Parnaiba Basin, Northeastern Brazil:
separation by Preparative Thin-layer chromatography

D0117 - Sidney G. de Lima, Lorena T. G. de Almeida, Antonia L. S. Santos, Edymilais da S.
Sousa, Jose A. D. Lopes, Ramses Capilla, Igor V. A. F. de Souza, Renata Hidalgo, Afonso
C.R. Nogueira:
Identification and distribution of Carotenoids Aromatics in the Devonian Source Rocks of the
Parnaiba Basin, Northeastern Brazil (ID 254)

D0118 - Ivan V. Goncharov, Svetlana V. Fadeeva, Nikolay V. Oblasov, Vadim V.
Samoilenko: Revisiting the Nature of Paleozoic Oils in the South-East of Western Siberia

D0119 - Cezary Grelowski, Franciszek Czechowski, Joanna Gamrot:
Hydrocarbons in the Western Pomerania Lower Carboniferous deposits, NW Poland

D0120 - Liangliang Wu, Brian Horsfield, Ferdinand Perssen, Cornelia Karger:
Releasing covalently bound biomarkers from kerogen matrices using MSSV catalytic
hydrogenation

D0121 - Shouzhi Hu, Heinz Wilkes, Brian Horsfield, Honghan Chen, Shuifu Li:

Geochemistry and origins of crude oils in the Tarim Basin, northwestern China: insights from new data in the Bachu-Maigaiti area

D0122 - Daniel M. Jarvie:

Mississippian Madison Group Source Rocks, Williston Basin, USA: Quantification, correlations, and interpretive insights

D0123 - Wanglu Jia, Ping'an Peng, Alex L. Sessions, Zhongyao Xiao:

Distinct variations in the C and H isotope ratios of two oil families from the Tarim Basin, NW China

D0124 - Chunqing Jiang, Thomas Hadlari, Martin Fowler, Dale Issler:

Revisiting East Mackay B-45 oil from the Central Mackenzie Corridor, NW Canada: Potential source rocks based on latest geochemical characterization

D0125 - Benedikt Lerch, Dag A. Karlsen, Deirdre Duggan:

Geochemical characterization of oils from the Loppa High (SW-Barents Sea) and its implications for regional petroleum systems

D0126 - Hu Liu, Zewen Liao, Minghui Qi:

Stable Carbon isotope partition patterns of kerogen and its derived products constrained by its primary biomass

D0127 - Yuhong Liao, Ansong Geng, Yunxin Fang, Liangliang Wu, Fang Yuan, Yijun Zheng:

The application of covalently bound biomarkers released by catalytic hydrolysis in petroleum system study of highly overmature marine sequences in Upper Yangtze region, China

D0128 - Wang Liaoliang, Jian Xiaoling, Wang Gaiyun:

Oil Characteristics and Oil-Source Analysis of Mesozoic in the North Yellow Sea Basin

D0129 - Patricia Marin, Carol Mahoney, Christian Maerz, Martin Jones, Vladimir Blanco-Velandia, Thomas Wagner:

Cretaceous source rock environments in the Eastern Cordillera, Colombia: First results from geochemistry, organic petrology and sedimentology

D0130 - J. M. (Mike) Moldowan, Jeremy E. Dahl, Vladimir Blanco-Velandia, Yolima Blanco-Velandia, Claudia Orejuela-Parra, Silvana M. Barbanti:

Applications of asphaltenes, CSIA, and diamondoids to make breakthroughs for modelling complex petroleum systems

D0131 - Monia Ben Jrad, AnisBelhajMohamed, Sami Riahi, Ibrahim Bouazizi, MoncefSaidi, Mohamed Soussi:

Assessment of thermal maturity and depositional environment of the Ypresian source rock of thrust belt zones, Northern Tunisia

D0132 - Mark Obermajer, Keith Dewing, Martin G. Fowler:

Organic geochemistry of Silurian graptolitic shale and its petroleum source rock potential, Canadian Arctic Archipelago

D0133 - Tatyana Parfenova:

Geochemistry of hopanes and methylhopanes from the Sinskaya (Sinyaya) and the Kutorgina Formations of Lower Cambrian (southeast of the Siberian platform)

D0134 - Swagata Paul, Jyoti Sharma, Suryendu Dutta, Pratul K. Saraswati:
Biomarker and palynological evidences for tropical Paleogene vegetation from Western India

D0135 - Henrik I. Petersen, Michael Hertle, Attila Juhasz, Helle Krabbe, Charlotte Lassen:
Determination of oil families and source facies in the central part of the Danish Central Graben

D0136 - G.S.Pevneva, N.G. Voronetskaya, M.V. Mozhayskaya, Golovko A. K., V.A. Kashirtsev:
Hydrocarbon Composition and Structural Features of Asphaltene-Resin Components in Naphthenic Oils of West Siberia

D0137 - Natalia P. Fadeeva, Tatiana A. Shardanova, Mikhail B. Smirnov, Elena N. Poludetkina, Alexandra Mulenkova:
Peculiarities of Domanik formation organic matter within the South-Tatar arch

D0138 - Svetlana A. Punanova, Tatiana L. Vinogradova:
Distinguishing Features between Biodegraded and Immature Crude Oils

D0139 - Rustam Z Mukhametshin, Dauit Nukenov, Svetlana A Punanova:
Composition of Natural Bitumens and heavy Oil Fields in Tatarstan and Kazakhstan

D0140 - Bruno Quirino Araujo, Debora A. Azevedo:
Unprecedented occurrence and distribution of uncommon steranes in crude oils from Brazilian marginal basin, Brazil

D0141 - Arka Rudra, Suryendu Dutta, S.V. Raju:
Paleogene petroleum systems and vegetation in the tropics: biomarker approach from eastern India

D0142 - Tatiana A. Sagachenko, Natalia N. Gerasimova, Elena Yu. Kovalenko, Valeriy P. Sergun, Raisa S. Min:
Geochemistry of heteroatomic components in Paleozoic and Jurassic oils from Southeast deposits in West Siberia

D0143 - Tatiana A. Sagachenko, Tatiana V. Cheshkova, Valery P. Sergun, Elena Yu. Kovalenko, Svetlana S. Yanovskaya, Raisa S. Min:
The composition of structural fragments of resin-asphaltene substances and heteroatomic compounds of oily components in the oils of various chemical types

D0144 - Sawssen Mahmoudi, Anis Belhaj Mohamed, Moncef Saidi, Farhet Rezgui:
Characterization of organic matter of Devonian source rock, Ghadames Basin, Southern Tunisia

D0145 - Silvia Omodeo-Sale, Benoit Chauveau, Remy Deschamps, Pauline Michel, Isabel Suarez-Ruiz:

Composition of Natural Bitumens and heavy Oil Fields in Tatarstan and Kazakhstan

Rustam Z Mukhametshin**, Dauit Nukenov², Svetlana A Punanova³

¹Kazan (Volga Region) Federal University, ul. Kremlevskaya 18, Kazan, 420008 Tatarstan, Russia

²Independent expert of the Central commission on development of minerals of Ministry of oil and gas of republic of, Aktau, Kazakhstan

³Oil and Gas Research Institute, Russian Academy of Sciences, Moscow, 119331, Russia

(* corresponding author: punanova@mail.ru)

This report introduces the study into non-traditional sources of hydrocarbons, such as raw materials-natural bitumen and heavy oils in Tatarstan and Kazakhstan. Identification of their characteristics is necessary for assessing merchantability hydrocarbons, which include the industrially important toxic metals.

The term of natural bitumen used in this paper refers to viscous, viscoplastic, and solid bitumens, which cannot be extracted by methods commonly used in oil production. The most part of this is a disregarded reserve of hydrocarbon resources.

Our studies with the generalization of the results of other works demonstrated (Kayukova et al., 1998; Mukhametshin, Punanova, 2012) that the samples of bitumen from the Permian deposits of the region are the products of the supergene transformation of oils with high sulfur contents (2.8-5.9%) to different degrees with variations in oil, tar, and asphaltene contents from 24.8 to 69.4, from 19.4 to 48, and from 6.0 to 62%, respectively, that is, from superviscous oils to the viscoplastic asphalts of viscosity to 440 Pa · s or higher and solid asphaltites. Naphthides even within each particular bitumenbearing complex are characterized by various physicochemical properties and component compositions in spite of a comparatively narrow range of depths.

The temperature factor, which is +6-+8°C in the sandstone beds of the Ufa layer plays an important role in the accumulation of naphthides with a specific composition; because of this, the segregation of oil components and the solidification of paraffin in the pore space of collectors were observed.

This phenomenon was supported by the data of a comparative analysis of the properties of petroleum bitumens obtained from boreholes and extracts separated from the reservoir rocks of the Ufa layer: the former were characterized by the predominance of isoprenoid alkanes up to the complete absence of paraffin structures, whereas the latter were characterized by the AI type petroleum containing alkanes and normal and isoprenoid hydrocarbons in oils. According to Ashirov (Ashirov, 1962), a similar phenomenon was also observed in the Sadkinskoe deposit (northeastern board of the Buzuluk depression): E.K. Frolova found the occurrence of paraffin and ozocerite in Lower Permian dolomite cavities. Next, Ashirov noted that the precipitation of paraffin in the Lower Permian deposits is related to the rise of deep oils into the zone of lower temperatures, which caused its crystallization.

In the zone of hypergenesis, not only the physicochemical properties of naphthides and their hydrocarbon composition but also the concentrations of trace elements changed under the action of the above processes (Nukenov et al., 2001). Because of the loss of light fractions, the absolute concentrations of the elements bound to tar-asphaltene components (V, Ni, Co, Mo, Cr, Cu, etc.) in naphthides considerably increased. Furthermore, the heteroatomic tar-asphaltene components of naphthides, which contact with low-mineralized stratal water in the zone of hypergenesis, are capable of sorbing trace elements with variable valence such as V, Fe, and U. Not only an increase in the absolute concentrations of trace elements in naphthides but also a change in the ratio between metal concentrations are the process characteristics of hypergenesis approved with petroleum from the oil fields of many regions. As a result of experimental studies on the interaction of oils with low-mineralized water (Punanova, Chakhmakhchev, 1992), the washout of some elements (Zn) from oils and the absorption of other elements by oils as a result of active chemisorption from contacting water were found (the concentrations of newly formed V and Fe increased by a factor of 1.3-12). The V content of oils increased especially intensely in the presence of hydrogen sulfide and elemental sulfur. As a result of these conversions, as a rule, the Zn/Co ratio in hypergenically changed oils considerably decreased, whereas the V/Ni ratio noticeably increased. The V and Ni contents of natural bitumen from Permian layers are very high (Permskie bitumy Tatarii, 1976). The maximum average concentrations of V and Ni were found in bitumens from Lower Permian deposits (V = 910 g/t and Ni = 177 g/t).

Thus, the geological development of particular tectonic elements in the Ural-Volga Region is responsible for the specific mechanisms of oil conversion into natural bitumen, which is reflected in their composition and properties.

Kazakhstan and Tatarstan produce oils that are mostly heavy, high viscous, belongs to the category of non-traditional resources with a high content of metals, especially nickel and vanadium, that associate in crude oils from the asphalt-resinous components. All those factors draw the attention of the researchers to the need for an integrated approach to industrial V-naphthides and some of the modern methods of extraction of metals.

References

- Kayukova, G.P. et al., 1998. Proc. 7th UNITAR Int. Conf. on Heavy Crude and Tar Sands, Beijing, vol. 2, p. 1567.
- Mukhametshin, R.Z. and Punanova, S.A., 2012. Neft. Khoz., no. 3, p. 2.
- Ashirov, K.B., 1962. Tr. Gipro vostokneft' (Proc. Gipro vostokneft'), Moscow: Gostoptekhizdat, no. 5, p. 26.
- Nukenov, D.N., Punanova, S.A., and Agafonova, Z.G., 2001 *Metally v neft'yakh, ikh kontsentratsiya i metody izvlecheniya* (Metals in Petroleum; Their Concentration and Extraction Methods), Moscow: GEOS.
- Punanova, S.A. and Chakhmakhchev, V.A., 1992. Eksperimental'nye issledovaniya preobrazovaniya mikroelementnogo sostava naftidov pri protsessakh ikh migratsii, katageneza i gipergeneza. Modelirovanie neftegazoobrazovaniya (Experimental Studies of the Transformation of Trace Element Composition of Naphthides during their Migration, Catagenesis, and Hypergenesis: Modeling of Oil-Gas Formation), Moscow: Nauka.
- Permskie bitumy Tatarii (Permian Bitumens of Tatarstan), 1976. Troepol'skii, V.I., Ed., Kazan: Izd. Kazan. Univ.