GeoShale

2012

Recent advances in geology of fine-grained sediments

2nd Circular
GeoShale 2012

14 -16 May 2012
Warsaw, Poland

International Scientific Conference
organized by
Polish Geological Institute
National Research Institute
under the auspices of
Geocenter Poland

Registration Now Open; Call for Abstracts

www.geoshale.com

Introduction and Geological Background

Polish Geological Institute – National Research Institute is organizing scientific conference dedicated to fine grained sediments – **GeoShale 2012.** The conference will be held in Warsaw, 14 -16 May 2012.

1 Shale diagenesis:

Shale is the dominant rock type (70%) of the sedimentary part of lithosphere. Originally it contains majority of the organic matter preserved in sedimentary rocks and majority of fluids entrapped in sediments. During post-sedimentary diagenetic alteration (surface to 200°C) both organics and fluids are gradually released, while shale undergoes simultaneous gradual alteration affecting its organic matter, mineral matter, fluids left in the pore space, and fabric.

The products of organic diagenesis are partially transferred to fluids and minerals (N, B, Li, CO_2 etc.), partially released from shales (conventional oil and gas), partially stored in the source rock as shale oil and gas, and leftover bitumen and kerogen. Mineral diagenesis involves alteration of detrital minerals, precipitation of authigenic minerals, and their alteration with increasing temperature, all these processes involving some import and export of elements from shales to fluids and neighboring rocks. Illitization of smectite is of particular importance as these clay components are ubiquitous, volumetrically dominant (30% of shale mass on average), allow for the maximum paleotemperature estimation, and for K-Ar dating of diagenetic processes.

The changes of fabric during diagenesis include mechanical reorientation of platy particles under stress during compaction, crystallization of new platy minerals perpendicular to the maximum stress, reduction of organic components content by releasing their hydrocarbon fraction, and cementation, commonly by quartz and carbonates. All these complex changes of mineralogy and fabric determine the evolution of petrophysical properties of shales: increase of density, brittleness, and anisotropy of several properties, decrease in porosity and CEC, evolution of permeability. Also the responses of geophysical logging tools are affected by diagenetic changes of shales. All these alterations and properties greatly affect the shale capacity of gas generation, storage and expulsion. The session welcomes contributions from this entire field of shale diagenesis.

2 Shale sedimentology:

Fine-grained siliciclastic successions are relatively poorly known in comparison to understanding of carbonate and coarser clastic succession. However they dominate the sedimentary record in terms recorded of time and volume. More than a century ago, Henry Clifton Sorby-father of the sedimentology, pointed to the study of muds as one of the most challenging topics in sedimentary geology – this idea seems to be still alive.

In the past in Polish well reports shales were described as homogenous and structurless through hundreds of meters in the profile. Recent sedimentological analysis of drill cores reveals that deposition of those sediments is originated from suspension and traction currents and characterized by diversity of structures such as current ripples, wave ripples, hummocky cross-stratification (HCS), graded beds, water escape structures, soft sediment deformation and scours. Based on this kind of observation together with geochemical study as well as petrological and geophysical data, new depositional model for mud-dominated basins have been established. Majority of recent researches in Poland are focused on the Lower Paleozoic formations in East European Craton due to shale gas/oil exploration, and on the Mesozoic formations caused by CO_2 sequestration.

Detailed sedimentological observations are crucial for definiting facies types and prediction of their distribution, but also for tracing the most organic-rich units in the sedimentological profile, as the basic in terms of gas/oil shale prospects. Apparently monotonous fine-grained sediments are shown to be in fact miscellaneous giving an opportunity to further studies as sequence stratigraphy analysis.

Because of high core recovery during communism time, in Poland there is more than 500 000 meters of core. It gives an extraordinary chance for detail study right now and in the future.

Sessions:

Stratigraphic study of fine-grained sediments - from biostratigraphy to integrated stratigraphy

chairmen: Teresa Podhalańska, Polish Geological Institute;
Daniel Goldman, University of Dayton

Paleogeography – key for understanding depositional environment of fine-grained sediments

chairmen: Jennifer Tait, University of Edinburgh;
Jerzy Nawrocki, Polish Geological Institute

Accumulation of muddy sediments - sedimentology of fine-grained rocks

chairmen: Kevin Bohacs, Exxon Mobil Upstream Research Company;
Paweł Lis, Polish Geological Institute

Shale diagenesis and effects on shale properties

chairmen: Jan Środoń, Polish Academy of Science;
Arkadiusz Derkowski, Polish Academy of Science

Tectonics of shales

chairmen: Ken McCaffrey, Durham University; Piotr Krzywiec,
Polish Geological Institute

Organic and inorganic geochemistry of fine-grained sediments

chairmen: Achim Bechtel, Montanuniversität Leoben;
Leszek Marynowski ,University of Silesia

Geophysical contributions to understanding shale properties and behavior

chairmen: David Dewhurst, CSIRO Australian Resources Research Centre;
Grzegorz Wróbel, Polish Geological Institute

Exploration & Production experience in oil/gas shale prospects

chairmen: Laura Reich, Marathon Oil Corporation; Tomasz Maj, Talisman Energy Poland

Environmental aspects of shale gas E&P

chairman: Monika Konieczyńska, Polish Geological Institute

Invited speakers include:

Achim Bechtel / Montanuniversität Leoben, Austria

Kevin Bohacs / ExxonMobil Upstream Research Company, USA

David Dewhurst / CSIRO Earth Science and Resource Engineering, Australia

Nazmul Haque Mondol / Department of Geosciences, University of Oslo, Norway

Ken McCaffrey / Durham University, United Kingdom

Juergen Schieber / Department of Geological Sciences, Indiana University, USA

Jan Środoń / Head of Research Centre in Cracow, Institute of GeologicalSciences, Polish Academy of Science

Important Dates:

09.03.2012 - Deadline for submissions of abstracts
23.03.2012 - Notification on the acceptance to the authors
30.03.2012 - Early registration deadline
10.04.2012 - Technical program release
10.04.2012 - Deadline for registration

Conference Calendar:

11-13.05.2012 – Pre-Conference field trip
13.05 evening – Icebreaker party
14-16.05.2012 – Conference
16.05.2012 – Mid-Conference field trip
17-19.05.2012 – Post-Conference field trips

/ May

PN/MO	WT/TU	ŚR/WE	CZ/TH	PT/FR	SO/SA	ND/SU
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
		conference!				
21	22	23	24	25	26	27
28	29	30	31			

Call for Abstracts

Professionals and students are invited to **submit abstracts online** to the GeoShale 2012 conference. To submit the abstract you need to register on-line and then login on the webpage http://geoshale.pgi.gov.pl

If you are unable to register or submit abstract online, please contact Joanna Roszkowska-Remin +48224592274 or by e-mail geopic@pgi.gov.pl

Deadline for submitting abstracts: 09.03.2012

In the on-line form the default formatting will be set. There will be no special processing or editing of your abstracts. Therefore, please prepare them in the online form as camera-ready. They will be published in the some form as submitted.

Guide for authors:

- Abstracts shoud be up to 2,500 characters and cover objectives, procedures, results and conclusions
- Titles are required — they should be brief and state the topic
- Do not submit the figures – it will be unavailable
- 5 keywords are required
- Abstracts should be submitted in the form you would like to see them published, as they will not be edited
- Abstracts will be reviewed and authors will be informed of acceptance or rejection till 23.03.2012

Important: **GeoShale 2012 has no funding for speakers. Do not submit an abstract unless at least one author is certain to be able to attend the conference. All session chairs, speakers and poster presenters must register to attend the conference. No exceptions will be made. Abstracts will be published and distributed as a book of abstracts at the beginning of the meeting.**

It is planned that the proceedings of the conference will be published in the form of extended abstracts or short articles in the Polish Geological Institute Special Papers. The manuscripts should not exceed 2,500 words (references and figure captions excluded). There will be no limit on the number of references, tables or figures within reason.

Oral Sessions

In general, 15 minutes (depending on number of oral talks) will be allocated to each oral presentation, and 5 minutes for the discussion. One overhead projector and a PC with CD driver and data projector will be available. In case of PC presentations, PowerPoint 2007 and Adobe software will be available.

Poster Sessions

Posters will be on display in the coffee break area and will be presented during the whole conference. Size of the poster panel is 100 cm (vertical) x 70 cm (horizontal), portrait orientation (NOT landscape).

Registration is Now Open!

Early Bird registration (to 30.03.2012): 150 € - professionals / 80 € - students
Normal registration (after 30.03.2012): 180 € - professionals / 100 € - students

Method of payment:
All payments must be made in Euro (€) by bank transfer:

Polish Geological Institute - National Research Institute
4 Rakowiecka St., 00-975 Warszawa, Poland
IBAN: PL 73 1560 0013 2366 2335 1965 0011
Swift: GBGCPLPK

In the title of money transfer please write: GeoShale 2012; your name/surname;
Please register on-line before payment!
Please remember Pre & Post Conference Field Trips are not included with conference passes and must be purchased separately!

Venue:

FOCUS

Al. Armii Ludowej 26
Warsaw, Poland
www.budynekfocus.com

Accomodation in Warsaw:

Need to be booked by the participants themselves.
We present lists of hotels in the vicinity of the venue on the conference website: www.geoshale.com

Conference Language: English

For Patronage we asked:

Ministry of Science and Higher Education
Republic of Poland

MINISTRY OF THE ENVIRONMENT

- **Barbara Kudrycka** - Minister of Science and Higher Education
- **Marcin Korolec** - Minister of the Environment

To the Honorary Committee we invited:

- **Andrzej Jajszczyk** - Director of the National Science Centre, Poland
- **Marek Karabuła** - Vice-President of the Management Board of Polish Oil & Gas Company
- **Marko Komac** - President of the EuroGeoSurveys
- **Krzysztof Jan Kurzydłowski** - Director of the National Centre for Research and Development, Poland
- **John Ludden** - Executive Director of the British Geological Survey
  Marcia McNutt - Director of the United States Geological Survey
- **Antoni Tajduś** - Rector of the Stanisław Staszic AGH University of Science and Technology, Poland
- **Herbert Wirth** - President of the Management Board of KGHM Polska Miedź S.A., Poland
- **Piotr Woźniak** - Chief National Geologist, Under-Secretary of State, Ministry of the Environment, Poland

Scientific Committee:

- **Kevin Bohacs** - ExxonMobil Upstream Research Company, USA
- **Piotr Krzywiec** - Polish Geological Institute – National Research Institute
- **Jerzy Nawrocki** - Director of the Polish Geological Institute – National Research Institute
- **Juergen Schieber** - Department of Geological Sciences, Indiana University, USA
- **Jan Środoń** - Head of Research Centre in Cracow, Institute of Geological Sciences, Polish Academy of Science



Visit Warsaw


Warsaw, with over 400 years of pride as a capital, is the largest city and an economic, political and cultural centre of Poland. The fourth of the terrain is covered by parkland what gives the city freshness and unique character. In Warsaw you can see the history of hundreds of years written in architecture – with unique balance between graceful old and striking new buildings surrounded by green areas. With an extensive range of hotels and apartments in small distance to the GeoShale Conference venue, coupled with the ease of public transport, everything is within an arm's reach. See more about Warsaw at:

http://www.warsawtour.pl/en







for over **90** years PGI has been dedicated to protection of **NATURAL ENVIRONMENT** and its **RESOURCES**

Visit **The Polish Geological Institute – National Research Institute**

The Polish Geological Institute – National Research Institute (PGI - NRI) was founded on the 7th of May 1919 on the strength of the Resolution of the Parliament of the Republic of Poland. It is the oldest Polish nation-wide scientific institution. It is involved in comprehensive studies of geological structure of the country for practical use in national economy and environmental protection. In addition to scientific activities in all fields of modern geology the Institute was entrusted with the tasks of the Polish Geological Survey and the Polish Hydrogeological Survey. Moreover, it is responsible for the country's security in supply of mineral resources, the groundwater management, for monitoring of the geological environment and warning against natural hazards and risks. The Polish Geological Institute - NRI belongs to the association of European Geological Surveys – EuroGeoSurveys (EGS). In February 2009, the Council of Ministers bestowed the Polish Geological Institute the status of National Research Institute in recognition of the achievements and contribution to the developments in science and national economy during last 90 years.

More about Polish Geological Institute - NRI at:

www.pgi.gov.pl

Field Trips

11-13.05.2012
Holy Cross Mountains

17-19.05.2012
Sudetes Mountains

17-19.05.2012
Polish Outer Carpathians

17-19.05.2012
Lower Paleozoic Basin of Podolia

Field Trips

The first 3 field trips (A-C) are focused on the Lower Paleozoic basin developed on the East European Craton. The participants will have a chance to examine the basin general facies architecture from the facies proximal to the Caledonian Orogen with sandstones and mudstones **(Holy Cross Mountains; Field Trip A);** through relatively deep basin with claystones and mudstones **(core warehouse; Field Trip B)** to the carbonate platform **(Podolia; Field Trip C)**. Another field trip will be an opportunity to observe the Menilite Shale (Lower Oligocene), among the other shale formations within the Outer Carpathian flysch belt **(Field Trip D). Field Trip E** will be focused on shale series of the Sudetes Mountains.

Please remember! Pre & Post Conference Field Trips are not included with conference passes and must be purchased separately!
If you have any question please feel free to ask the field trip coordinator – Anna Dobrzeniecka geoshale@pgi.gov.pl

Silurian Succession of the Holy Cross Mountains

Field Trip: **A** / Poland

11-13.05.2012

Cost:160€ / **Start:** Warsaw, PGI-NRI / **Finish:** Warsaw

Duration: 2-3 days **/ Leader:** Wiesław Trela (PGI-NRI)
Includes: field trip guidebook, lunch packets, transportation, accommodation and breakfast.
Participants: Minimum 15, Maximum 30

Holy Cross Mountains (HCM) is a hill country in central Poland, in the vicinity of the city of Kielce. HCM is one of few regions within Trans European Suture Zone where Paleozoic formations are exposed at the surface. Among others, Ordovician-Silurian formations are exposed there. This includes both fine grained and coarse sediments of that age. Sandstones give an excellent opportunity to study sediment provenance area of the obscure source terrains. The variety of the Lower Paleozoic organic rich shale formations of different sedimentary environments can be observed. Also the Lower Carboniferous and Lower Jurassic organic rich shale will be examined.

Core warehouse workshop – parasequence in mudstones

Field Trip: **B** / Poland

16.05.2012

Cost: 50€ / **Start:** Warsaw, PGI-NRI / **Finish:** Warsaw

Duration: 1 day **/ Leader:** Paweł Lis (PGI-NRI)
Includes: guidebook, lunch packets, transportation.
Participants: Minimum 5, Maximum 20

Decades of intensive drilling from scientific & exploration reasons in Poland resulted in wealth of core material. There is more than 500 000 meters of core localized in 6 core warehouses. The field trip will give an opportunity to visit one of the core warehouses to study Lower Paleozoic rocks representing distal facies (relative to coastline) and observe parasequences developed in mudstones. Participants will see differences between mudstones deposited in high and low sedimentation rate environment, and deposition response to eustatic sea level rising through Silurian.

Silurian Succession within the Lower Paleozoic Basin of Podolia

Field Trip: **C** / Ukraine

17-19.05.2012

Cost: 300€ / **Start:** Lviv, Ukraine /**Finish:** Lviv, Ukraine

Duration: 3 days **/ Leader:** Ryszard Wrona (Institute of Paleobiology Polish Academy of Sciences), Marek Jasionowski, (PGI-NRI) **/ Includes:** field trip guidebook, lunch packets, transportation, accommodation and breakfast.
Participants: Minimum 15, Maximum 30

The field trip offers a good opportunity to examine carbonate facies association of Paleozoic shallow marine settings that can be defined as a platform side of eastern margins of the basin. The participants will have a chance to observe carbonates in deeply eroded Dnister River Valley, organized in the third order cyclothems: elementary, mezocyclothems and macrocyclothems. The stratigraphic sequence comprises Ludlow sediments occur within Kamieniec Podolski whereas Pridoli sediments occour in Skala Podolska. Towards the west, there is a chance to observe transition to marly and shaly facies of the lowermost Devonian.

The Carpathians – Menilite Shale as the main oil source in the Carpathians

Field Trip: **D** / Poland

17-19.05.2012

Cost: 250€ / **Start:** Warsaw, PGI-NRI / **Finish:** Warsaw or Cracow

Duration: 2-3 days **/ Leaders:** Michał Krobicki (PGI-NRI, AGH), Jan Golonka (AGH)
Includes: field trip guidebook, lunch packets, transportation, accommodation and breakfast.
Participants: Minimum 15, Maximum 20

Polish Outer Carpathians is a region where the modern petroleum industry was born about 160 years ago. The excursion will focus on Menilite Shale (Oligocene), which represents the main source rock for oil and gas deposits. The Menilite Shale is an example of hydrocarbon source rock, being a source to major part of Carpathians oil & gas fields. Facies and sedimentological development, as well as organic geochemistry and diagenesis of the Outer Carpathian shales will be examined in the outcrops within outstanding landscape of Carpathian Mountains.

The Sudetes – Paleozoic metal - bearing shales

Field Trip: **E** / Poland

17-19.05.2012

Cost: 250€ / **Start:** Warsaw, PGI-NRI / **Finish:** Warsaw or Wrocław

Duration: 3 days **/ Leader:** Stanisław Wołkowicz (PGI-NRI)
Includes: field trip guidebook, lunch packets, transportation, accommodation and breakfast.
Participants: Minimum 10, Maximum 15

During 3-day trip participants will have a possibility to go through three formations. (i) Lower Permian lacustrine claystone and mudstone developed as an uranium occurrences and oil source rock. (ii) Lower Paleozoic shale as an example of diagenesis and methamorphism in Kaczawa Mountains. (iii) Upper Permian copper-bearing shale in the SW Polish Basin (mine visit).

Organizing Committee:

Polish Geological Institute - National Research Institute:

- **Paweł Lis – chairman**
- Anna Bagińska
- Wojciech Brochwicz-Lewiński
- Anna Dobrzeniecka
- Michał Krobicki
- Joanna Roszkowska-Remin
- Mirosław Rutkowski
- Grzegorz Wróbel

For the latest news see **our webpage:**

www.geoshale.com

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