

## MINUTES OF COMMISSION I

### General Coal and Organic Petrology

69<sup>th</sup> ICCP Meeting – Bucharest, Romania, 5-6<sup>th</sup> September 2017

**Chair:** Stavros Kalaitzidis, [skalait@upatras.gr](mailto:skalait@upatras.gr)

**Secretary:** Dragana Životi , [dragana.zivotic@rgf.bg.ac.rs](mailto:dragana.zivotic@rgf.bg.ac.rs)

### Opening remarks

The session of Commission I started at 14:30 on Tuesday September 5<sup>th</sup>, and was attended by 38 members. The Chair of Commission presented some “highlights” of the previous ICCP meeting in Bucharest in 1999, outlined the programme for the COMMISSION I and presented the progress regarding the ICCP Petrographic Data Bank, as well as the publications in International Journal of Coal Geology of the **Liptinite** and **Oxidation Editorial Groups**. These two EG publications are published under Open Access terms; **Classification of liptinite-ICCP System 1994**, in International Journal of Coal Geology 159, 40-61 and **Coal weathering and laboratory (artificial) coal oxidation**, International Journal of Coal Geology 171, 12-36. Both publications can be assessed also from the ICCP web site.

### Temporal Variations in Coal WG – Lopo Vasconcelos

Although this WG is not active any more, Lopo continues to add new data into the database, which now reaches in total 13,666 maceral data entries from 76 countries and territories (22 “Gondwana” and 54 “North Atlantic” countries/territories). **ICCP Members are encouraged to use the Database that is loaded on the ICCP webpage (<http://www.iccop.org/workinggroup/temporal-variation-of-coals/>) and/or to add any new data that become available by contacting either Lopo or Com I Chair/Secretary.**

Commission’s I sessions included a Microscope Session, as well as presentations of the following WG’s:

- SCAP - Single Coal Accreditation Program,
- ISO Standard
- Distinguishing Features of Macerals Editorial Group,
- Standardization Working Group,

- Reflectance & Terminology of Zooclasts in old sediments,
- Suberinite Working Group,
- Xylite-rich Lithotype Classification WG,
- New Methodologies and Techniques in Organic Petrology WG
- Petrographic Image Database,
- New Handbook - Application of TEM and SEM Chapter,
- New Handbook Editorial Group
- Liptinite Editorial Group – finalized activities,
- Oxidation Editorial Group – finalized activities,

Apologies for not attending were received by Walter Pickel, Thomas Gentzis and Giannis Oikonomopoulos.

### **Single Coal Accreditation Program - Kimon Christanis**

Kimon presented the activities, the results, and some challenges of the 2016 SCAP round. The 2016 SCAP exercise was announced in February 2016. Participants have electronically registered *via* the ICCP webpage. Unfortunately, due to late registrations the dispatch of invoices, samples and instructions has lasted from April till August 2016.

In the past exercises, beginners received six block samples and continuing participants two bulk coal samples. However, in the 2016 exercise for the first time all participants received bulk samples. In total, around 350 samples were dispatched. The participants had to measure the following parameters:

- Vitrinite random reflectance (VR) according to ISO 7404-5, measured on collotelinite (ICCP, 1998).
- Vitrinite content (VC) according to ISO 7404-3.

The extended deadline to submit the results was set on 31<sup>st</sup> of October 2016.

In total 107 analysts were initially registered in the 2016 SCAP from 63 laboratories located in 23 countries; 106 analysts corresponded further, from whom 65 were ICCP members. The

breakdown in continuation *versus* new entries is 89 to 17, respectively. It is also interesting to note that the majority of the participants are ICCP Members, something that did not happen since the 2008 round. The geographic (concerning continents) distribution of the participants was: Oceania 30%, Europe 33%, America 23%, Africa 10% and Asia 4%.

Kimon also commented on the logistics of the Programme so far:

- After the experience of the 2014 round, sample sets were sent to participants in certain countries per registered post. This increased the expenses per sample set, although at the end, proved being cheaper (30%) and more reliable (i.e. less lost sample sets, no delays in the procedure).
- For the first time a high-rank coal (anthracite) was included in the sample set. It was sent to selected participants (old-standing).
- Several payments were enormously delayed and after several reminders sent by Jen and Kimon, the completion of the sample-dispatch could be achieved only by the end of August, instead of the planned date that was May.
- For the first time in SCAP's history, the participants' results were assessed through a database. This prerequisites that the organizer inserts into the database coal and sample codes for all the participants; then the data summary sheet for each one is generated and sent to the participant. In order to be able to complete this job, all the participants had to pay the fee on time and to receive the samples. Late payments and lost sample sets lead to delays. For this reason, the data summary sheets had been distributed to the participants early September.

Kimon acknowledged the contribution of the following persons: the former and the current chair of the ASC, namely Deolinda Flores and Magdalena Misz-Kennan for their continuous support; particularly Deolinda for her valuable contribution in the preparation of the database to electronically assess participants' results; the Honorary Treasurer Jen for handling the SCAP finances; Isabel Suárez-Ruiz, Gisela & Gerd Bieg, Deolinda Flores, Jolanta Kus, Stavros Kalaitzidis, Małgorzata Piachaczek for sample supply; all the SCAP participants; his students Nadia Kalantzi, Vasia Samara and Zoe Dilgeraki for assistance in preparing the sample sets.

Regarding the samples databank, since only bulk samples will be distributed from now on, **Members who can supply suitable bulk, single coal samples, have to contact Kimon: [christan@upatras.gr](mailto:christan@upatras.gr).**

After short discussion Commission I thanked Deolinda, Magda and Kimon for their great work in Porto on the final checks and evaluation of the accreditation data.

Commission I thanked Kimon for all his efforts in convening the SCAP.

### **ISO Standard – Walter Pickel**

Stavros presented on behalf of Walter Pickel the ISO standard status. ISO Standards undergo a 5-year revision cycle and Walter suggests having a rather formal ICCP representative to ISO regarding particularly the ISO 7404 discussion. Recent microscopes development significantly influenced petrographic work, (new LED illumination rather than halogen lamps or mercury 'burners', replacement of photomultipliers etc.). According to the progress done within the WGs, ICCP might want to have a list of required modifications and changes ready when the revision time will come. Also, Walter expressed the need for ICCP to have an active participation.

Petra David pointed that usually the president of ICCP had to be actively involved in ISO standard Committee. During the discussion Angeles Borrego mentioned that she will communicate with Walter, as he is also active in the field, to discuss further the representation of ICCP.

Commission I thanked Walter and the WG participants for their efforts in delivering the ISO Standard.

### **Distinguishing Features of Macerals EG – Walter Pickel**

Stavros continued with the progress of the EG on Distinguishing Features on behalf of Walter Pickel, and presented the aim of the WG. As a start Walter suggests sending questionnaire to those who have (or will) sign(ed) up in order to collect suggestions of what to add. These suggestions will be edited to a compilation that will then be circulated again. The idea is to compile distinguishing features between macerals, maceral sub-groups etc. that the current classifications seem to be inadequate to assist in cases of “transitional stages” “difficult samples” etc. The questionnaire will be circulated among the 22 members, who expressed their interest to participate with comments and additions. A draft version of this compilation will be presented at the next ICCP meeting.

Some participants pointed out that fly ash and biomass terms could be incorporated into the text. Angeles Borego emphasized that the questionnaire will be updated. Petra David pointed that the under-development image database should be related to the final text.

Commission I thanked Walter for his efforts in this Editorial Group.

## **Standardization WG – Walter Pickel**

Stavros presented on behalf of Walter Pickel the 2017 Exercise for the Standardization WG.

Fifteen (15) sets of two lignite samples from the Lausitz Lignite District, Open Cast Nochten, 2<sup>nd</sup> Lausitzer Main Seam, Miocene, kindly supplied by Claudia Niemtz from Vattenfall AB, was distributed to the members earlier this year, for maceral analyses and reflectance measurements, along with a set of photomicrographs. Samples have been provided to participants crushed but not set. The objective of the round robin exercise is to perform maceral analyses on both samples to the maceral type level. Analysts also asked to note their level of experience in lignite analyses, e.g. high, low, never seen one in my life. Deadline for submitting the result is 30<sup>th</sup> September. However, if more applicants for samples can be found, this may be extended for them. Walter will provide a report of the 2017 activities on the next meeting.

Anyone interested to participate to the 2016 RIC please send an email to Walter [walterpickel@optusnet.com.au](mailto:walterpickel@optusnet.com.au).

During the discussion some participants asked about the goal of the exercise: the rationalization of the classification or preparation for different accreditation process for lignite? Paul Hackley pointed that lignite classification was published in 2005. Stavros mentioned that apart for validating our classifications, it is a step forward to a potential Accreditation Program in low-rank coals, as it was decided in 2015 in Potsdam. Angeles mentioned that the samples are quite difficult and hence perhaps not so proper for Standardization WG, and it would be useful to have some pictures of problematic macerals from previous exercises. Difficulties in huminite identification in comparison with vitrinite were pointed out by Rıza Görkem Oskay.

Commission I thanked and congratulated Walter for his dedication in conducting the Standardization round robin exercises.

## **Reflectance & Terminology of Zooclasts in old sediments WG – Thomas Gentzis**

Stavros presented on behalf of Thomas Gentzis the activities and the sample preparation progress for the 2017 Round Robin exercise within the Reflectance & Terminology of Zooclasts in old sediments WG. The graptolite-bearing sample was kindly provided by Dr. Deolinda Flores, University of Porto. Based on the sample weight, it was clear that the

material was of sufficient quantity to prepare a total of twelve (12) samples. The original sample was crushed to -20 mesh (840 micrometers) and sieved to ensure that the 12 splits were homogenous. Twelve blocks were polished following ICCP procedures. Approximately 20 members have expressed an interest to participate in the analysis. Samples will have to be shared among the participants. About half of the participants have already received polished blocks to examine and report the features of Zooclasts and their reflectance values. The rest will receive the samples in October, along with instructions. Analysts are kindly requested to complete the analysis and submit the results to Thomas Gentzis by the end of January 2018. Results will be compiled, reviewed, analyzed, and shared with the participants early next year. Results of the RR study will be reported at the next ICCP meeting.

Additional members signed in Bucharest to participate in the Round Robin study. Anyone interested, please contact Thomas ([Thomas.Gentzis@corelab.com](mailto:Thomas.Gentzis@corelab.com)).

Commission I thanked Thomas for his efforts in convening this WG.

#### **Suberinite WG – Peter Crosdale & Antonis Bouzinos**

Peter Crosdale presented the results of the 2016 Suberinite exercise. Participants got two polished blocks of the Jurassic Walloon Coal Measures, Surat Basin, Qld for analysis. Tasks of the exercise were:

1. Mandatory – do a point count following ICCP Nomenclature,
2. Optional, depending on time and resources
  - a. Vitrinite reflectance measurements
  - b. Images – hopefully annotated
  - c. Fluorescence images / observations

Comparison of data between analysts was compromised by sub-sampling issues. The work will continue with new sample set prepared in a different manner to ensure better representivity.

During the discussion participants expressed their difficulties in identification of suberinite, as well as in collotelinite/ulminite A and B. Since some participants used the huminite group terminology a discussion was conducted among Stavros, Georgios Siavalas, Angeles Borrego, Petra David and Peter regarding the usage of Huminite or Vitrinite terminology for

materials with lower than 0.5% reflectance values. Stavros and Rıza Görkem Oskay commented that Tertiary low rank coals could also be included in the future exercises, despite the differences between Jurassic and Tertiary coals.

Ten members expressed their interest to participate in the 2017 Exercise, however, anyone interested in participating please contact Peter ([peter.crosdale@energyrc.com.au](mailto:peter.crosdale@energyrc.com.au)). All the relative documentation of the WG is available on the ICCP webpage (<http://www.iccop.org/workinggroup/suberinite>).

Commission I thanked Peter and Antonis for convening this very interesting WG.

### **Microscopy session**

At the afternoon microscopy session, the attendees examined xylite-rich lignites presented by Georgeta Predeanu. Commission I would like to thank Georgeta, and Mr. Christian Ciohodaru “temco Company”, Bucharest, Romania, for providing an Olympus equipment for the Microscope sessions.

The Commission I continued their work at 9:00 on Wednesday 6<sup>th</sup> of September.

### **Xylite-rich Lithotype Classification WG – Giannis Oikonomopoulos**

Stavros presented on behalf of Giannis the activities of the WG that was established in 2015. The objective of this WG is to develop a Classification scheme for Xylite-rich lithotypes of low-rank coals. The aims of the 2<sup>nd</sup> year exercise are focused on macroscopic description of xylite. The exercise included 98 figures of xylitic material:

- 78 figures of hand specimens from Greece (mainly) and Poland (exercise Part I).
- 20 figures from the field from Greek xylite dominated successions (exercise Part II).

The main purpose of the exercise is to discuss and choose the valuable parameters applicable for classification of xylite-rich lithotype of lignite. Thus, the exercise was proposed to be accomplished on a free description basis (without restrict guide-lines). Various parameters, which are used internationally in controlling each classification system, were suggested to participants to facilitate the description of the xylitic material. Extra field for additional parameters proposed by the participants was also available. Only four (4) participants accomplished the exercise till now, whereas 5 at least additional participants are expected to

accomplish the exercise by the end of 2017. Comparing data between analysts, Giannis conclude that not all parameters are applicable for each sample. Colour terminology needs definition. The parameters Colour, Gelification, Fusinite, Layer, Mineral matter, and Vol. % contribution, seems valuable and applicable for classification nomenclature. Extensive discussion is needed concerning “Vol.% contribution” parameter. Although this parameter was extensively used, however large discrepancies were observed. Definition of the parameter “layer” is needed. “Concentrations” are proposed to be placed as a 3<sup>rd</sup> subdivision of “Fusinite” parameter. “Roundness” parameter was not applicable for xylite description. The use of inequality symbols, introduced by one participant, are very useful. “Fatigue” parameter was extensively used, suggesting applicability for nomenclature purposes.

Exercise will continue until the end of 2017 (more participants will be involved and thus, more results will be included in the final evaluation). Discussion on the obtained results will follow. For the next activities Giannis suggest creation of a map showing the occurrence of xylite-dominated deposits in eastern Europe – western Asia including the age of each deposit. Contribution to the ICCP database with photomicrographs of woody materials, and writing of proposal as an addition to the existing nomenclature (handbook?).

During discussion the participants suggested that the Guidelines for the exercise should be explained in detail, with limited number of pictures. Stavros also suggested to include core samples for next exercises, because of obvious differences in determination in comparison with channel samples. Georgeta pointed that Romania has its own classification and could contribute to the exercise.

Anybody interested to participate in the activities of this WG please contact Giannis ([giannis@metal.ntua.gr](mailto:giannis@metal.ntua.gr)).

Commission I would like to thank Giannis for his initiative and efforts in this Working Group.

### **New Methodologies and Techniques in Organic Petrology WG- Lila Gurba**

The WG was established at the 52nd ICCP meeting in Rio de Janeiro (2000) with aim to provide an update on novel and new methods and techniques that can be applied to Coal and Organic Petrology. Lila Gurba presented an overview of the Handbook of Instrumental Techniques Applied in Coal and Organic Petrology: X-ray Computed Tomography (Micro-CT) and Positron Annihilation Spectroscopy (PAS) Techniques and their Applications in

Coal and Organic Petrology. Lila discussed the principles and the significance of the micro-CT and provided examples on how we can get value by implementing the technique. Micro-CT has a unique ability in resolving pores and grain structures, as well as both vertical and horizontal heterogeneity. The main applications presented included the studies of shale properties, CO<sub>2</sub> sequestration studies, as well as characterization of coal microstructure and porosity. The presentation is available on ICCP webpage. In the presentation on the Positron Annihilation Spectroscopy (PAS) Lila outlined the principles and the significance of this very sensitive technique to characterise open-volume defects (pores, vacancies, vacancy clusters). PAS is a non-destructive technique. It can resolve size, concentration and distribution of free volume holes and depth or sampling volume. Recent applications include the studies of Barnett shale. Commission I encourage members to present within this WG research summaries in the broader field of coal science, in which organic petrography could be a significant input. Interested parties please contact Lila ([l.gurba@unsw.edu.au](mailto:l.gurba@unsw.edu.au)) during the year.

Commission I thanked Lila for her ideas and efforts in this WG.

#### **Petrographic Image database – Petra David**

Petra David and Stavros Kalaitzidis reported on recent developments of the ICCP Image Database. They presented past activities of the working group and future plans. During the discussion members pointed out that images from various WGs e.g. Qualifying WG, Concentration of Organic Matter WG, as well as from DOM Atlas could be incorporated.

Prior to the meeting, Stavros had been in contact with Silk Tech, the company that already runs the ICCP website. They provided a cost estimation for an image database with a number of pre-defined features related to architecture and design. In principle two main options exist to implement such a database: 1: Custom, i.e. built from scratch and 2. CMS, i.e. using existing software (e.g. Wordpress, Drupal). The estimated costs for such an implementation range from 10 k€ for Drupal, 15 k€ for Wordpress to 25k€ for Custom development. To proceed with the database development during the coming year, Stavros and Petra asked Com I members to agree to spend a maximum amount of 15 k€ for the development of the database. Some participants expressed their disagreement with spending the estimated costs. It was decided that this request should go to the General Assembly for approval at the

Closing Plenary Session. The request was put to a vote at the GA on Thursday 7<sup>th</sup> of September and was rejected (see Minutes of GA).

It was the general opinion that the ICCP Image database should be based on commercially available software. Suggestions were given to potentially reduce costs. Pola Khanaqa pointed out that in India the costs for database development are much lower. Jolanta Kus described the BGR image database that was recently developed and it was agreed that Petra will visit BGR until the end of the year to investigate if the BGR version can also work for ICCP. Members are also requested to contact Stavros or Petra if they can assist to provide more information on (costs of) image databases.

Commission I thanked a lot Petra and Stavros for their efforts and dedication on this work.

**New Handbook Editorial Group** – Petra David, Ivana Sýkorová, Isabel Suárez Ruiz & Kimon Christanis

Petra David discussed the present situation of the New Handbook. The activities around a new Edition slowed down during the last years, pending for a decision in relation to the ICCP copyright issues. At the 2016 meeting, council decided that parts of the ICCP Handbook should be published as an ‘open access’ publication with the names of the contributing authors followed by the name of ICCP as author. With this arrangement, a New Handbook Edition becomes obsolete.

To honour the efforts and work done with the old Handbook Editions, Petra suggested to re-arrange the digitized text to the previously proposed format, so that apart from the original Handbook Editions, the information becomes also available in a more user friendly way. It was suggested to link the different sheets to a content table for reading and/or download.

It was also reminded that the old Handbooks are already scanned and uploaded on the open part of the webpage <http://www.iccop.org/publications/iccp-handbook/> for everybody to download.

Commission I thanked Petra, Isabel, Ivana and Kimon for their efforts on the Handbook, as well as all the volunteers that participated in the previous activities.

**New Handbook - Application of TEM and SEM Chapter** - Barbara Kwieci ska, Sławomira Pusz and Brett J. Valentine

Stavros presented the revised MS of the New Handbook - **Application of TEM and SEM Chapter** authored by Barbara Kwiecińska, Sławomira Pusz and Brett J. Valentine. After the addition of the “Shales Chapter” in November 2016 the manuscript was uploaded in the webpage for 8 months for the review stage. Stavros asked the Members of Com I for any additional comments and to approve the chapter to put on vote to the GA on Thursday and to be published in the International Journal of Coal Geology. Com I forwarded the final version of the **Application of TEM and SEM Chapter** to the GA for approval.

Com I would like to express their gratitude to the authors for their efforts and patience to deliver this very important section of the Handbook.

### **Closing Remarks**

Stavros Kalaitzidis and Dragana Životi closed the Session of Commission I.

ICCP Members were also reminded that the following Commission I Services are available for the Organic Petrography Community:

**Single Coal Accreditation Program, SCAP** – Kimon Christanis ([christan@upatras.gr](mailto:christan@upatras.gr)).

**Reflectance Standard Checking:** The service to check standards against the *ICCP Reflectance Standard* continues to be available from Dave Pearson, Walter Pickel and Gerd Bieg (USD 50; and free of charge for ICCP members).

Commission I would like to encourage ICCP members to visit the webpage, since a lot of data and information from the WGs has been uploaded <http://www.iccop.org/commissions/commission-i/>. Also, the convenors of the various WGs are encouraged to check and update regularly the web material.

Com I would like to thank the convenors for their dedication and efforts to run the WGs, and encourage ICCP members to participate in Commissions Exercises.

Finally, Commission I would like to thank Georgeta Predeanu and her team and all the participants of the sessions for their active participation resulting in well organised and productive Meeting.