

ICCP NEWS



NO 74
AUG 2019

Newsletter of the International Committee for Coal and Organic Petrology (ICCP). Founded 1953. <http://www.iccop.org>

On Line ISSN 1445-4858

7st Annual Meeting of the ICCP



The Hague, The Netherlands



71st ICCP Symposium 20 September 2019

Organic Petrology with special focus on Oil Generation from Coals and Carbonaceous Shales

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INSTITUTIONAL MEMBER



ICCP WEBSITE

<https://www.iccop.org>

Please send any feedback, comments, and uploads to Stavros Kalaitzidis [mail-to:skalait@upatras.gr](mailto:skalait@upatras.gr)

The ICCP Newsletter, ISN 1445-4793 (1445-4858 online) is distributed 3 times a year, & welcomes contributions from members & non-members. The minutes of the Annual Meeting are published in the final issue each year, & the program for the Annual Meeting is included mid-year. The Newsletter is distributed to all members & is available on the open area of the webpage. This enables anyone interested in the science to obtain exposure to the ICCP activities. ICCP application details are available on the website, or contact the General Secretary, Walter Pickel. walter.pickel@organicpetrology.com

PLEASE "LIKE" THE ICCP FACEBOOK PAGE, AND START CONTRIBUTING <https://www.facebook.com/International-Committee-for-Coal-and-Organic-Petrology-ICCP-301670160628781/>

EDITORS COLUMN

Dear Readers,

I am very sad that I am not able to participate in The Hague ICCP meeting in September. Unfortunately, family and work commitments need to keep me in Johannesburg. But, I look forward to the ICCP meeting in China in 2020. Please can you forward me photographs and snippets from the meeting and symposium? And do raise a mug of beer to those who are absent! The final program is available (from page 4), and on the website. Please do keep abreast of any changes by visiting the website. And please post on the Facebook page – see link below.

Congratulations to Lujza Medvecka, from the Masaryk University, Brno, Czech Republic, on receiving the student travel award to attend the ICCP Organic Petrology Training course, held in Potsdam in July. Lujza is completing a PhD on the Environmental Applications of organic petrology by assessing modern sediments. In total, six applications were received for the student travel grant. I look forward to obtaining further feedback on the training course for the next newsletter – a photograph of attendees and the course presenters is on the opposite page.

I am interested to note that Lujza is applying organic petrology to modern sediments. I recently had a discussion with Sasol regarding petrography and they were amazed at how far the boundaries can be pushed. Organic petrologists will continue to be in demand as we work in many applied areas such as environmental issues, coal and ash utilization (beyond power generation), critical raw materials (including graphite), shale gas, and other fossil fuel exploration programs, the metallurgical industry (including coke), coal blending, and academia (understanding coal formation and geological and depositional environments).

As usual, please do encourage students and young researchers to submit images, short summaries of their research, and participate in the discussions around organic petrology. Charlotte Badenhorst has recently submitted her PhD thesis for examination – see the summary on page 8.

Regards, Nikki

Members who can supply suitable bulk, single coal samples, for the SCAP Program, please contact Kimon: christan@upatras.gr.

ICCP MEETING 2019 CONTACT

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KNOW YOUR COAL PETROGRAPHERS

This happy group of lovely petrographers were all at the 70th ICCP Meeting, Brisbane. Let's hope we see them in The Hague! Visit p 7 so you know who they are!



PRESIDENTS COLUMN

It is a pleasure to welcome you to the 74th issue of the ICCP News. Here you will find information on final meeting events and also a summary of a recent PhD Thesis. Please remember that this space is open for your research work.

A few weeks ago the 13th ICCP Course took place, and the 10th celebrated in Potsdam. We appreciate the effort of Andreas Küppers and Antje Treutler from the GFZ Potsdam for supporting the organization of the course and providing the logistics. And Carl Hilgers who once again made available for 1 day the microscope and Fossil student system for the ICCP training activities. The trainers Isabel Suárez-Ruiz and Walter Pickel agreed that the students were very much engaged and all had a great training time. I would like to stress how much the ICCP is in debt to the trainers that generously devote their time and

knowledge to disseminate the methods and procedures for which the ICCP is acknowledged.

I regret to inform you that Helena Moura will no longer join us in our meetings. A number of you have had the chance to meet her at recent events and she was considering to become a member, but passed away unexpectedly at a very young age.

We are at the doors of a new meeting, the 71st of the ICCP, back to The Netherlands for the 6th time and for the first time in The Hague. I would like to thank Georgios Siavalas and the colleagues of the Shell Global Solutions International and the Shell Events Team for taking care of every aspect to host our Annual Meeting. We will have four days of Commissions meetings and one day symposium with special focus on *Oil Generation from Coals and Carbonaceous Shales*. A single-day field trip to South Limburg will bring us back to the coal mining activities in the region. I am really looking forward to meeting all of you there. Do not miss it.

Best regards, ICCP President, Angeles.

13th ICCP course 'Organic Petrology and its Applications'



Held from 15th – 19th July, 2019, in Potsdam, run by Isabel and Walter, with the support of Andreas Kueppers and Antje Treutler from the GFZ Potsdam and with the surprise support by Carl Hilgers and a microscope for one day.

The 9 participants: Anna Filipek, Poland, Justyn Borosko, USA, Ingo Arndt, Germany, Anastasia Vaytekhovic, Russia, Nadezhda Dobryakova, Russia, Luiza Medvecka, Czech Republic, Fabiamn Kaesbohrer, Germany, Malek Radhwani, Tunisia and Dionisio Luis Garcia. (Antje Treutler unfortunately missing from the photo)

2019 ICCP Meeting The Hague,

The Netherlands

71st Meeting of the

International Committee
for Coal and Organic

Petrology (ICCP)

15-21 September, 2019

Welcome note

The Netherlands has long been among the cradles of both organic petrology and the ICCP, itself having hosted an ICCP meeting 5 times in the past, including the very first one held in Geleen, back in 1953. Heerlen, the very place where the Stopes-Heerlen system was established, Hoensbruck and Utrecht were the other locations, with the former hosting the meeting twice and the latter being the last location in the Netherlands to have an ICCP meeting, 16 years ago. It is therefore a great pleasure and big honor to have the Netherlands carry on this long tradition.

This year, the honor comes to The Hague (Den Haag), being both the World's Peace Capital and base to the Dutch Government. The meeting will be supported by Royal Dutch Shell, one of the world's oil majors, and will be followed by a one-day symposium. Despite the fact that governments, organizations and companies have agreed and committed to significantly reduce their carbon footprint over the next decades, it is still conventional "fossil" fuels that most of world's energy demand relies on. And the Netherlands is no exception to this trend. On top of the routine annual ICCP activities, the meeting will offer an excellent opportunity to professionals from both research and industry to exchange views into discussing ICCP's and organic petrology's role in the energy transition.

One year after the centennial anniversary from the publication of Marie Stopes' pioneering work "*On the Four Visible Ingredients in Banded Bituminous Coal: Studies in the Composition of Coal*" that set the foundations to what would later become the Stopes-Heerlen System, I warmly invite you to attend the 71st ICCP meeting in September.

Dr. George Siavalas
Chair of the Organizing Committee

71st Annual Meeting of the ICCP



The Hague, The Netherlands



Meeting Venue



Bleyenberg, -the Meeting venue

The venue is located in the Hague city centre, **Grote Markt 10, 2511 BG, Den Haag**. It is within 10 minutes walking distance from the Central Station and can be accessed through Trams #2, 3, 4, 6 (Stop: Grote Markt-1 minute walking distance).

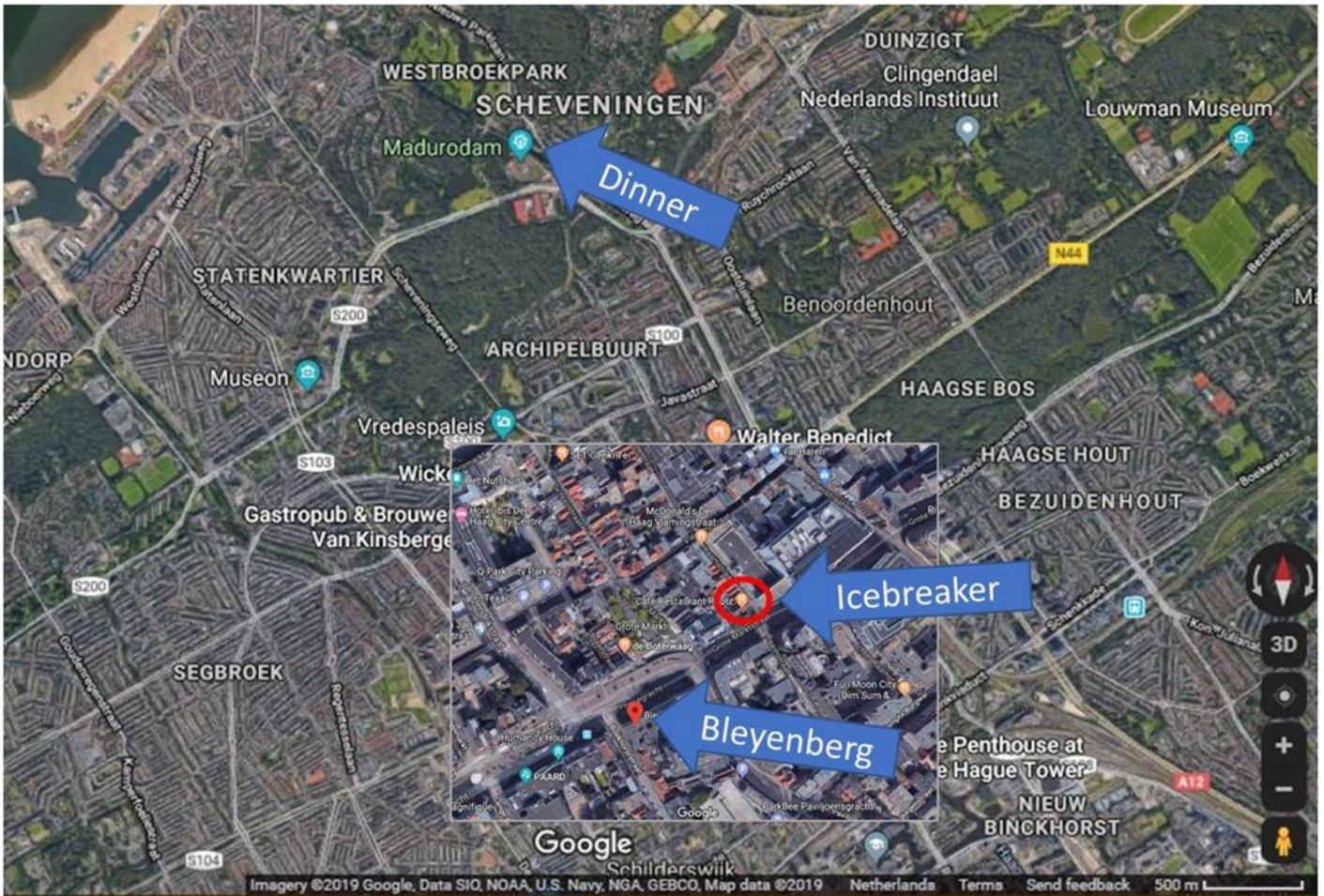
*: The Microscope Sessions will be hosted in Shell Projects & Technology, Alaska Building, Lange Kleiweg 40, 2288 GK, Rijswijk.

Icebreaker

The kick-off event will take place in Rootz (Grote Marktstraat 14, 2511 BJ), on Sunday, September 15. Gates open at 19:00.

(Please remember to send me photographs—Editor)

**REFER TO THE MAP FOR
EVENT LOCATIONS**



Map of the Hague showing locations of the Meeting's venue, Icebreaker and Dinner

Cultural, entertainment and other information

Home to some 150 international organizations including the International Court of Justice and the International Criminal Court, and known as the global city of Peace and Justice. Testimony to that statement is Peace Palace (Vredespaleis), the so-called Temple of Peace and justice itself, hosting the global peace flame and the International Criminal Court and Permanent Court of Arbitration. For early arrivals and late departures Peace Palace is open to the public for guided tours on Sundays. More information

can be found at <https://www.vredespaleis.nl/?lang=en>.

Please refer to the website for further information regarding the cultural events



Please contact Georgios if you would like to attend the field trip

Field Trip

A single-day field trip to South Limburg (Province in the south of Netherlands) on Saturday, September 21 will follow the ICCP meeting. Except for the Dutch "mountains" other field trip attractions include the Roman catacombs and a visit to the Mijnmuseum in Heerlen as starters before the main course of the day, the **Steenkolenmijn** is served.

Land of castles and fortresses, South Limburg also boasts a more than half-century long, coal-mining history. With the slogan "*There is no such word as can't*", the mines operated as late as 1974 and helped the region to become one of the more prosperous in the country. Little remains today from this not so-long ago era and the Mijnmuseum and Steenkolenmijn are the best locations, where someone can get a glimpse of it.

A minimum number of 25 participants is required for the field trip to take place, so those who want to attend are kindly requested to register **before July 31st** or **indicate their interest to participate by sending an e-mail to the organizer**. A detailed field trip itinerary will be announced when the number of registered participants meets that requirement.

| Time | Sunday 15-Sep | Monday 16-Sep | Tuesday 17-Sep | Wednesday 18-Sep | Thursday 19-Sep | Friday 20-Sep | Saturday 21-Sep |
|-------------|---|---|---|---|---|---|---|
| 08:00-08:30 | | Registration | | | | Registration | |
| 08:30-09:00 | | | | | | | |
| 09:00-09:30 | | Opening session | Com. II-Identification of Dispersed OM WG (J. Kus) | Com.I-Xylite-rich Lithotype Classification WG (Y. Oikonomopoulos) | Com. III-Carbon Materials WG (G. Predeanu & I. Suárez-Ruiz) | Symposium | |
| 09:30-10:00 | Com. II-Correction Function for Fluorescence Lamps (A.G. Borrego) | | Com.I-Suberinite WG (P. Crosdale) | Com. III-Coke Petrography WG (M. Wojtasek) | | | |
| 10:00-10:30 | Com. II-Dispersed Organic Matter in Sedimentary Rocks WG (J. Kus) | | Com. II-Coal Bed Methane-CO2 Sequestration WG (L. Gurba) | Com. I-Distinguishing Features of Macerals WG (W. Pickel) | Com. III-Environmental Applications WG (G. Siavalas & S. Kalaitzidis) | | |
| 10:30-11:00 | Com. II-Shale-gas Studies (L. Gurba) | | Coffee break | Com. III-Complex Blends WG (A. Singh & J. Esterle) | | | |
| 11:00-11:30 | Coffee break | | Coffee break | Com. I-Standardization WG (W. Pickel) | Coffee break | | Coffee break |
| 11:30-12:00 | | ICCP General Assembly (A.G. Borrego & W. Pickel) | Com. II-Pseudovitrinite reappraisal WG (L. Gurba) | Com.I-New developments in 'Fossil' systems (C. Hilgers) | Com. III-Liquefaction Residues Classification WG (H. Gerschel) | Symposium | |
| 12:00-12:30 | | | Commission II Closing Remarks (J. Kus & G. Siavalas) | Commission I Closing Remarks (S. Kalaitzidis & D. Zivotic) | Lunch | | Com. III-Coal Blend Accreditation Programme (I Suárez-Ruiz) |
| 12:30-13:00 | | | Lunch | Commission III-Opening Remarks (M. Miszkennan) | Commission III Closing Remarks (M. Miszkennan) | Lunch | |
| 13:00-13:30 | | Lunch | Commission I Opening Remarks (S. Kalaitzidis & D. Zivotic) | Commissions I & II-Microscope Session | Lunch | | |
| 13:30-14:00 | | | Com. I-Single Coal Accreditation Programme (K. Christanis) | | | | Symposium |
| 14:00-14:30 | ICCP Council Meeting | Commission II-Welcome remarks (J. Kus & G. Siavalas) | Com. I-ISO Standard (W. Pickel) | | | | |
| 14:30-15:00 | | Com. II-DOMVR Accreditation Programme (J.G. Mendonça-Filho) | Coffee break | | | Closing ICCP plenary session (A.G. Borrego & W. Pickel) | Coffee break |
| 15:00-15:30 | | Coffee break | Com. I-Raman Spectroscopy WG (K. Lünsdorf) | | | | |
| 15:30-16:00 | | Com. II-Identification of Thermal Maturity Relevant OM WG (P.Hackley) | Com. I-Sample Preparation Techniques (P. Crosdale) | | | | |
| 16:00-16:30 | | Com. II-Confocal Laser Scanning Microscopy WG (P.Hackley) | New Methodologies and Techniques in Organic Petrology WG (L. Gurba) | | | | |
| 16:30-17:00 | | | | | | | |
| 18:00-18:30 | | | | | | | |
| 18:30-19:00 | | | | | | | |
| 19:00-19:30 | | | ICCP Council Meeting | | | | |
| 19:30-20:00 | Ice-breaker and registration | | | | Conference Dinner | | |
| 20:00-20:30 | | | | | | | |
| 20:30-21:00 | | | | | | | |
| 21:00-21:30 | | | | | | | |
| 21:30-22:00 | | | | | | | |

Symposium

The organizing and scientific committees of the 71st ICCP Meeting invite all interested participants to participate in the **Symposium on Organic Petrology with special focus on Oil Generation from Coals and Carbonaceous Shales**. This will follow the activities of the ICCP commissions, scheduled for Friday 20th of September 2019. The Symposium will be structured in multiple sessions.

Symposium Main Theme: Featuring organic petrology and geochemistry studies on the oil generation potential of coals and carbonaceous shales worldwide. Participants are encouraged to present their relevant work, particularly on coals of the humic type.

Other themes: Featuring studies on other organic petrology and geochemistry topics not related to the Symposium's main theme, including among others, general organic petrology and coal geology and environmental and technological applications of organic petrology and geochemistry. A further subdivision into sessions will be decided closer to the meeting's dates, depending on the popularity of topics among the submitted abstracts.

Guidelines to presenters

Oral presentations:

Oral presentations should be kept to a maximum of 15 minutes followed by a 5-minute Q&A session. Presenters and chairs of sessions are expected to comply with this time-frame courtesy to the next presenter. No presentations outside of the Symposium's programme shall be allowed.

All presentations shall be given in English, supported by slides also written in English. Title slide should include the title and

contributors of the presentation as per the book of abstracts.

All slides shall be digitally displayed and the presentation files shall be in ppt (or pptx) or pdf format. Presentation files shall be delivered to the chair of each session prior to its start. There will be no available option for the display of hardcopy slides. Presenters are encouraged to test the display of their presentation in the Symposium's projector to ensure that all features are displayed as intended.

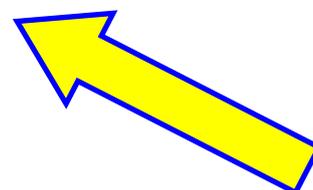
Poster presentations:

Poster preparation and printing is the authors' responsibility and must be finalized prior to the meeting's start. There shall be no available option to print the poster at the site. **Recommended paper size is A0 (841x1189 mm) but posters the size of A1 (594x841 mm) and B1 (707x1000 mm) are also acceptable.**

All posters shall be written in English and shall have a title line indicating the title and contributors and their respective affiliation as per the book of abstracts. All figures and tables shall be self-explanatory and have a caption. A color display of figures is recommended.

Poster presentations shall be displayed at the designated location and during the time indicated in the meeting's programme. During that time authors are requested to stay near their posters to discuss with the audience. There will be no room available for posters that are not included in the book of abstracts.

The Symposium Program will be available online after August 20.



Registration

Registration is now open.

Please register at <https://shellsmartmeetings.cvent.com/AnnualICCPMeeting> selecting one or more of the following options:

*: **An additional fee of 50 \$USD applies to late registration, made after July 31, 2019.** Dinner and field trip fees remain unchanged after July 31. Payment options include credit card, wiretransfer or cash at the reception desk during the meeting. The cash payment option falls under the 'late registration' category and by default incurs the additional 50 \$USD fee regardless the timing of the online registration.

Registration fees (\$USD)

Early bird* full registration (Icebreaker, ICCP Meeting, Symposium, Dinner and Field Trip): 530 \$USD

Early bird* full registration-No field trip (Icebreaker, ICCP meeting, Symposium, Dinner): 450 \$USD

Early bird* ICCP Meeting and Symposium: 360 \$USD

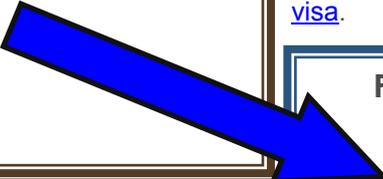
Early bird* One-day (Symposium only): 100 \$USD

Student (ICCP Meeting and Symposium): 170 \$USD

Icebreaker only: 40 \$USD

Dinner only: 100 \$USD

Field trip: 100 \$USD



Accommodation

The Hague offers a number of accommodation options over a wide range of prices and amenities. Several hotels are located around the city centre within 5-10 minutes walking distance to the meeting venue. Alternative accommodation options can also be found in nearby cities and towns such as Delft, Leiden and Rotterdam, all within less than 30 min train-ride to the Hague city centre.

No special arrangements will be made on an individual basis and accommodation arrangements will be each delegate's responsibility. However, we will be happy to provide advice on accommodation options and if you seek such, please contact georgios.siavalas@shell.com.

Getting there and transportation options within the Netherlands

Please refer to the previous ICCP Newsletter and the website .

Visa Requirements

The Netherlands is part of the Schengen Area countries. Foreign nationals from certain countries might need a short-term visa to visit the Netherlands. For more information on visa types, a list of countries whose nationals need a visa to the Netherlands and visa application process visit <https://www.netherlandsandyou.nl/travel-and-residence/visas-for-the-netherlands/short-stay-schengen-visa>.

For queries and requests about the meeting, please contact

Dr. George Siavalas

georgios.siavalas@shell.com

Organizing Committee

- * George Siavalas, Shell Global Solutions International
- * Euphrasia Wong, Shell Global Solutions International
- * Amr El-Azhary, Shell Global Solutions International
- * Stavros Kalaitzidis, University of Patras, and the Shell Events Team

**CONTRIBUTIONS TO THE NEXT
ICCP NEWS BY
1 Dec 2019**

KNOW YOUR COAL PETROLOGISTS (p.1)

Enjoying the conference evening celebrations in Brisbane were: (L-R) Magda, Isabel, Sandra, Heike, and Ivana, representing five different countries. Join the ICCP and become part of a global community. Magda is Commission III Chair; Isabel has recently retired from the Council after many, many years; Sandra is Commission III Secretary; Heike works at Thyssen Krupp in Germany, and Ivana is from the Czech Republic.

PhD Thesis Summary:

Char extracted from coal ash as a possible replacement for natural graphite – “Charphite”

*Charlotte Badenhorst (University of Johannesburg, South Africa)
Supervisors: Prof N Wagner (UJ), Dr B Valentim (Porto), Prof F Viljoen (UJ)*

Introduction

This doctoral thesis forms part of the third ERA-MIN collaboration (2015) on Sustainable Supply of Raw Materials in Europe (see <https://www.fc.up.pt/charphite/> for more details). Partners from Portugal, Poland, Romania, Argentina, and South Africa were involved. The aim was to suggest a possible substitute for natural graphite in green energy technologies, by forming synthetic graphite from recovered char found in coal ash. As natural graphite is a global critical raw commodity and coal ash is a waste product, this collaborative project, therefore, had both economic and environmental merit.

Due to the extensive nature of the ERA-MIN collaboration, only the results pertaining to the South African involvement were presented in the thesis. Consequently, the thesis dealt with: i) The obtainment and characterisation of coal ash sources from South African coal conversion utilities; ii) the development of a char-ash separation process; iii) the characterisation of the extracted chars; and iv) natural graphite sources from southern Africa were also identified, obtained, and characterised for comparison. The char graphitization and the testing of the formed Charphite in green energy-related reactions were conducted by other partners and not considered here.

Experimental

South African combustion and gasification utilities provided fly (FA), bottom (BA), and gasification (GA) ash samples. The feed coals (C) to the combustion utilities were also obtained. A representative sample from each coal and ash was characterised using a variety of techniques including petrography analyses. A Zeiss Imager M2M reflected-light petrographic microscope with an oil immersion objective and a combined magnification of $\times 500$ was used. The system was equipped with Hilgers Diskus Fossil software. Samples were prepared based on ISO 7404 part 2 (2009). Mean random vitrinite reflectance (based on ISO 7404 part 5, 2009) and maceral point counts (based on ISO 7404 part 3, 2009) were undertaken on the coal samples. Quantitative and qualitative point count analyses were conducted on the parent ash samples, applying the identification method from Hower (2012).

The char fractions were separated from the ash samples. Carbon grade and carbon recovery were used to assess the efficiency of the separation trials. Carbon grade can be defined as the purity of the product stream and was measured with the loss on ignition (LOI) method (combustion at 815 °C). Carbon recovery can be defined as the percentage of feed carbon distributed to the product stream. The separation process commenced with sizing of the parent material, followed by electrostatic, magnetic, and density separation. The process was determined and optimised based on case studies, equipment availability, and discussion with the collaborators. The density separation step was only included for FA PS4. The char separated from the two FA samples were char-

acterised using a variety of techniques. Petrographic assessment included the Hower (2012) classification, the ICCP char classification, and reflectance analyses. Reflectance analysis was applied following the procedure described by Li *et al.* (2018) for amorphous graphite. A strontium-titanium standard 5.37 was used for calibration.

Two natural graphite samples were also obtained and characterised in order to gain an understanding of natural graphite for comparison to the synthetic graphite and char concentrate. The samples were supplied by Jonkel Carbons and Grafites (Pty) Ltd. The first sample originated from the Goedehoop 120 LT deposit situated in the Soutpansberg mountain range in the Limpopo Province of South Africa. The second sample was obtained from a Rantwood Enterprise deposit located in Karoi Zimbabwe close to the current operating Lynx Graphite Mine. Coal petrography, Raman, and various other techniques were conducted.

Results and discussion

All coal samples were classified as Medium Rank C bituminous coals. The inertinite percentages were high for all coal samples, with the sub-maceral inertodetrinite being dominant.

The parent ash samples consisted predominantly of glass and quartz particles, and solid spheres, cenospheres, plerospheres, iron-glass spheres, and crystal inclusion (mullite) spheres. Other phases in the ash samples included mullite, anorthite (BA and GA samples), and ferrospheres. Hematite and magnetite form the ferrospheric fraction of ash and were morphologically classified into dense and dendritic ferrospheres. This morphology differed to ash supplied by the other ERA-MIN consortium partners.

A summary of the char-ash separation process results are provided in Table 1. Although the addition of the density separation step showed that the carbon grade can be increased with more than 15 wt. %, the dense liquid used in density separation processes is also known to penetrate the pores of the char product, making it unsuitable for value-added applications, such as mercury adsorption, activated carbons, and catalysts. The recoveries were low at 7.19 – 32 %. A low carbon recovery is undesirable, seeing that the starting char in ash percentages were low. A low recovery will thus result in low volumes produced, which will be an economic constraint. The reason for the low recoveries might be that small glass particles were embedded in the initial char matrix, giving it an unliberated nature (Figure 1).

Anisotropic char and inertinitic char are dominant in the samples. As shown in Table 2, both samples contained mostly mixed porous particles. The bireflectance for FA PS2 CHAR was relatively high at 5.47. As a result, the anisotropy fraction was also high at 0.49. The bireflectance for FA PS4 CHAR was 1.82 and the anisotropy 0.22.

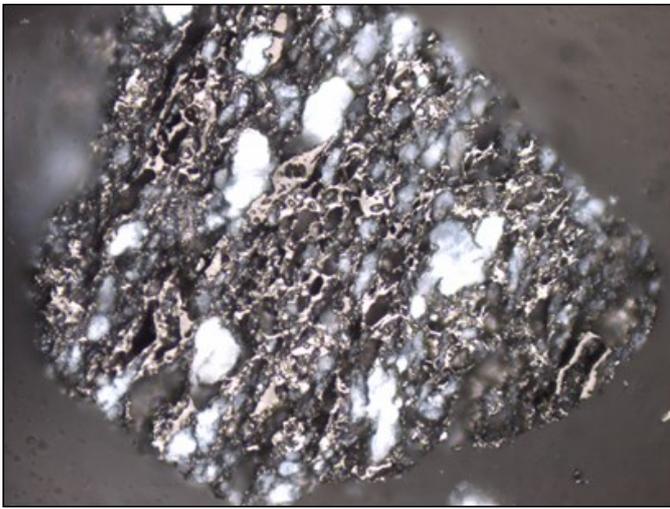


Figure 1: Typical char particle found in the ash samples. Included minerals finely disseminated and interwoven into the char matrix can clearly be seen (Reflected-light, oil immersion, x500).

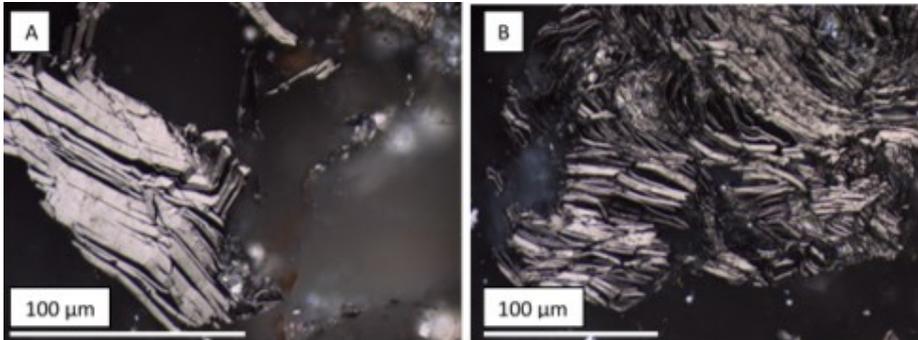
Table 2: ICCP char classification results for the fly ash char concentrates.

| | FA PS4 CHAR | FA PS2 CHAR |
|------------------|-------------|-------------|
| Tenuisphere | 0.0 | 1.8 |
| Crassisphere | 0.0 | 0.2 |
| Tenuinetwork | 2.9 | 2.8 |
| Crassinetwork | 23.3 | 0.4 |
| Mixed porous | 40.4 | 44.0 |
| Mixed dense | 22.4 | 11.4 |
| Inertoid | 5.5 | 10.6 |
| Fusinoid / solid | 3.9 | 6.1 |
| Mineroid | 1.6 | 22.7 |

Table 2: Summary on the char-ash separation: Carbon grades, carbon recoveries, and sample yields.

| Sample | Initial grade (wt. % LOI) | Final grade (wt. % LOI) | Carbon recovery (%) |
|--------------------------------|---------------------------|-------------------------|---------------------|
| FA PS4 | 7.04 | 65.74 | 32.00 |
| FA PS4 (density step included) | 7.04 | 82.91 | 18.95 |
| FA PS2 | 4.01 | 56.55 | 17.80 |
| BA PS1 | 5.47 | 53.21 | 7.19 |
| GA East | 9.04 | 45.10 | 16.83 |

Figure 2: A) Coarse flake graphite (bireflectance 9.28 and anisotropy 0.86 ; B) Agglomerated graphite flakes (Reflected-light, oil immersion, x500).



the chars as being “transitional”. It is predicted that the chars are graphitizable.

References

Hower, J.C., 2012. Petrographic examination of coal-combustion fly ash. International Journal of Coal Geology 92, 90–97. <https://doi.org/10.1016/j.coal.2011.12.012>

Conclusions

Although the char-ash separation process yielded high product grades (45 to 83 wt. % carbon), the carbon recoveries were unfortunately very low (6 to 32 %). Due to the low starting carbon in ash percentages, a significant amount has to be recovered to make economic sense. The reason for the low carbon recoveries might be due to small, unliberated ash minerals that formed part of the char matrix.

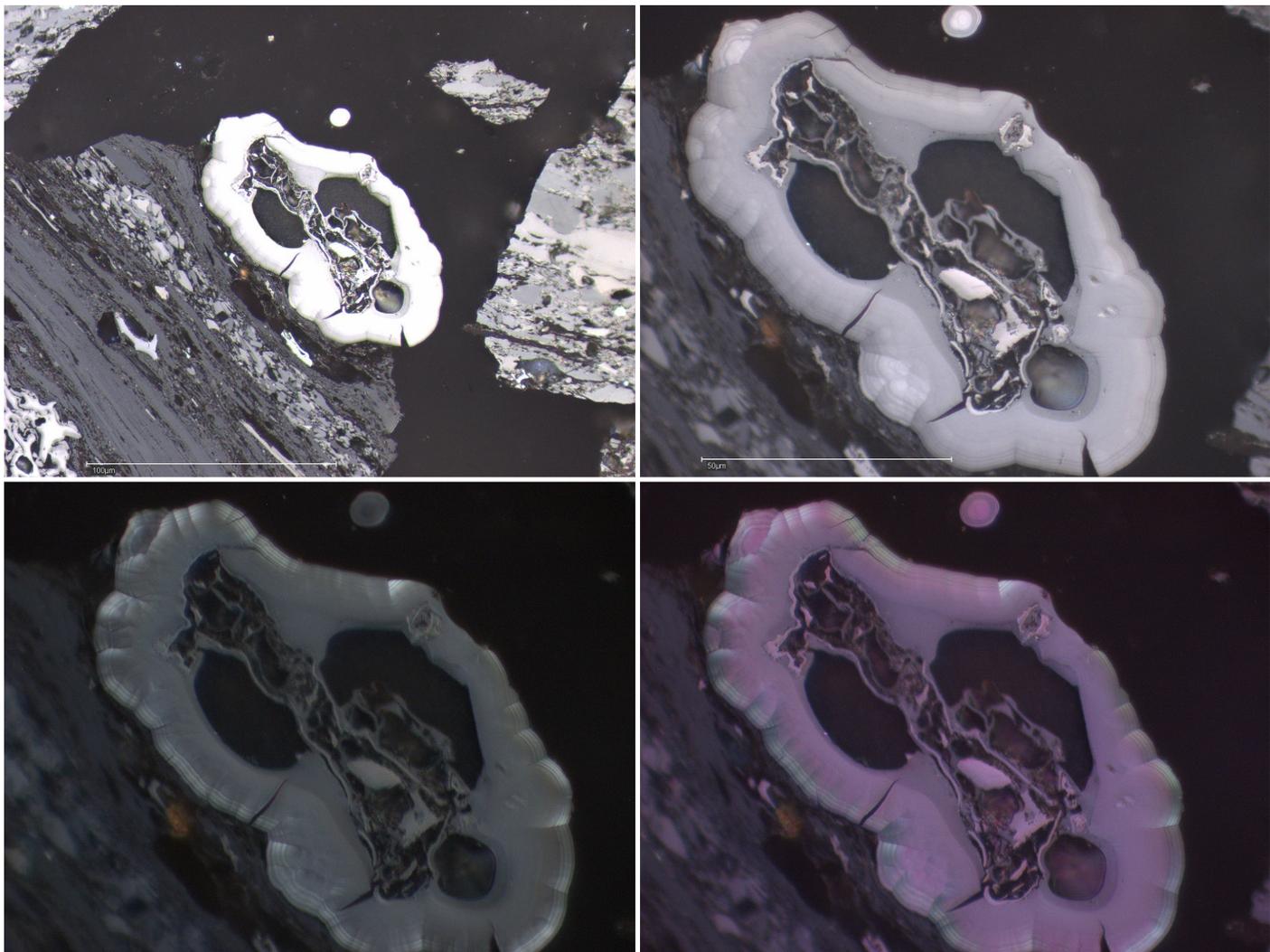
The evaluation of the extracted chars showed the presence of strong carbon-carbon bonds, similar to those found in graphite, and limited impurities (oxygen, nitrogen, sulphur, and hydrogen). The anisotropy percentages of the samples ranged between 22 and 49 %; the reference natural graphite sample had an anisotropy of 86 %. The three-dimensional structure of the chars can be described as turbostratic, with randomly orientated carbon layers, small graphite crystallite sizes, and large interlayer spacing. Raman microspectroscopy classified

ISO (International Organisation for Standardisation). 2009. Methods for the petrographic analysis of coals. Part 2: Methods of preparing coal samples. Geneva: ISO. (ISO 7404-2).

ISO (International Organisation for Standardisation). 2009. Methods for the petrographic analysis of coals. Part 3: Method of determining maceral group composition. Geneva: ISO. (ISO 7404-3).

ISO (International Organisation for Standardisation). 2009. Methods for the petrographic analysis of coals. Part 5: Method of determining microscopically the reflectance of vitrinite. Geneva: ISO. (ISO 7404-5).

Li, K., Rimmer, S.M., Liu, Q., 2018. Geochemical and petrographic analysis of graphitized coals from Central Hunan, China. International Journal of Coal Geology 195, 267–279. <https://doi.org/10.1016/j.coal.2018.06.009>



KNOW YOUR PETROGRAPHY : I WOULD WELCOME FEEDBACK ON THESE IMAGES (email the Editor:). Interesting pyrolytic carbon development on edge of a heated particle; coal Medium Rank C coal, Ermelo Coal-field, South Africa
 (TL: x500 scale bar = 100 microns; TR x1000 scale bar=50 microns; BL and BR: x-polars and rotated.

Members Corner

PLEASE REMEMBER TO SUBMIT ADVERTS FOR CLASSIFIEDS, OBITUARIES FOR ICCP MEMBERS, SNIPPETS OF INFORMATION, OR ANYTHING THAT MAY BE OF INTEREST TO THE MEMBERS.

New Applications for Associate Member



Héctor Villar (I, II)
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Mr Villar commenced his organic petrology career in 1978 at CIRGEO, Argentina. He spent 3 years at the Technical University of Aachen, under the direction of Prof. Dr. Monika Wolf. Before starting GeoLab Sur S.A. in 2006, Mr Villar worked as a consultant for organic geochemistry projects in the petroleum industry in Argentina. Mr Villa was previously an ICCP member—welcome back!



Application for Full Membership

Please encourage all active organic petrologists to apply for ICCP membership. And, if you are eligible, please apply for full membership. All membership information can be located on the webpage.

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UPCOMING EVENTS

12—15 August 2019. 9th International Symposium on Energy. Liverpool, England. <https://energy9.nscj.co.uk/Sessions.html>

18—23 August 2019. Goldschmidt, Barcelona, Spain. <https://goldschmidt.info/2019/>

3—6 September 2019. 36th International Pittsburgh Coal Conference, Pittsburgh, USA. www.pccpitt.org

7-11 September 2019. 36th TSOP Annual Meeting, Bloomington, USA. https://www.tsop.org/annual_meetings.html

18—13 September 2019. 4th International Conference on Mercury as a Global Pollutant (ICMGP 2019). Krakow, Poland. <https://mercury2019krakow.com/qb/>

16—20 September 2019. 71st ICCP Meeting, The Hague, Netherlands. www.iccop.org/meetings/2019-iccp-meeting-in-the-hague-the-netherlands/.

23—27 September 2019. 14th International Congress on Applied Mineralogy, Belgorod, Russia. <http://www.geo.komisc.ru/icam2019/en/>

23—24 September 2019. 4th International Conference on Oil, Gas & Petrochemistry. Kuala Lumpur, Malaysia. petrochemistry@madridge.com

8-10 October 2019. 26th International Conference Ashes from power generation. Sheraton Hotel, Sopot, Poland. www.unia-ups.pl

28—30 October 2019. Multi-pollution emissions from coal (MEC) conference—14. Hanoi, Vietnam. www.mec-workshops.org. Abstracts by 14 September 2019.

13 - 15 November 2019. 19th International Coal Preparation Congress, New Delhi, India. <http://showsbee.com/fairs/53691-International-Coal-Preparation-Congress-2019.html>

24—28 November 2019. ICCS&T, Poland. <https://iccst2019.com/qb/organizers.html>.

25—28 November 2019. 2nd Springer Conference of the Arabian Journal of Geosciences Sousse, Tunisia. www.cajg.org

2—8 March 2020. 36th International Geological Congress. Delhi, India. 36igc.org.

10—15 May 2020. 10th International Freiberg Conference. Shanghai, China.

21—26 June 2020. Goldschmidt 2020, Honolulu, Hawaii. <https://goldschmidt.info>

12—16 September 2020. 72nd ICCP Meeting, Xuzhou, China

16—23 September 2020. 37th TSOP Meeting, Xuzhou, China.

14-16 September 2020. 1st FERIA Conference, The European Conference on Fuel and Energy Research and its Applications (ECCRIA). Nottingham, UK. <https://cathyhillevents.co.uk/feria/index.html>

PLEASE NOTE

FROM 2019 ALL MEMBERS ARE RESPONSIBLE FOR MAINTAINING THEIR CONTACT DETAILS ON THE WEBSITE

Should you wish for new contact details to be published in the newsletter, please do forward these to the Editor (nwagner@uj.ac.za). Should you require your login details, please contact the General Secretary (walterpickel@optusnet.com.au).

The ICCP Newsletter provides a forum for students, young and advanced researchers, petrologists, petrographers, and any one else, to present results, submit short reviews or articles, post notifications, request assistance, announce relevant conferences / workshops / courses. Please submit all documents for inclusion into the next ICCP Newsletter.

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DEADLINE FOR CONTRIBUTIONS TO THE NEXT ICCP NEWS: 1 Dec 2019