



The Society for Organic Petrology

NEWSLETTER

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The 40th Annual TSOP Meeting, September 14-22 2024, ULAANBAATAR, MONGOLIA



*Chinggis Khaan Monument
Photo by Tim Moore*

TOP NEWS

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TSOP PRESIDENT'S LETTER

Dear TSOP Members,

I hope this message finds you well.

Last month, we were thrilled to host our second seminar in the TSOP-EAOG virtual seminar series, which attracted over 60 participants at its peak. I would like to extend my heartfelt thanks to Paul Hackley from USGS for his enlightening talk, and to Joe Curiale for his expert moderation. The discussion session was particularly engaging, filled with insightful exchanges. For those who could not join us live, please view the session on TSOP's YouTube channel.

Looking ahead, our 40th annual meeting is just three months away! I encourage everyone to visit our meeting website as soon as possible to take advantage of the early bird registration discount. Our dedicated Organising Committee members, Tim Moore, Erdenetsogt (Tsogo) Bat-Orshikh, and their colleagues in Mongolia, have recently conducted a pre-run of our field trip and checked out all the venues and make sure all things are in hand. Many thanks to the entire Organising Committee for their hard work in preparing for the annual meeting!

As we approach the election season, please stay tuned for the TSOP council ballot in the coming months. We have an excellent group of candidates ready to contribute to our society's future.

Today, as I write this letter, we celebrate the Dragon Boat Festival, a cultural event observed not only in China but in many countries around the world. This festival features dragon boat races and the making of rice dumplings, which are wrapped in bamboo leaves. It's a time for communities to come together and celebrate, much like how we, as a society, aim to collaborate and share knowledge in the field of organic petrology.

Thank you for your ongoing commitment to TSOP. I look forward to seeing everyone in Mongolia this September.

Warm regards,

Lei Zhao

TSOP President 2023-2025



Dr. Lei Zhao
TSOP President



Best Western Premier Tuushin Hotel (with 'heart' lights) by the Mongolian Parliament building.

*Decoding the shift:
Organics and Critical Minerals in Future Energy*

ABSTRACTS DUE: 1 July 2024

Don't delay as time is short!

visit website for submission instructions: <https://www.tsop-2024.com/>

Everything is in Place!

Abstracts are coming in and registrations are being made. Don't miss out! This meeting is one of the most ambitious annual conferences to be undertaken by TSOP. If you want a truly unique experience, while also exchanging ideas and networking with the top scientists in organic petrography and critical minerals, book your place now.

In addition to premier talks on organics, minerals and future energy, we also have a half-day Symposium on Mongolian Geology. With talks from local experts you'll learn about how this fascinating country developed geologically. It's not to be missed. We're learning more every day and this symposium will bring you up-to-date. See the schedule below.

Schedule for 40th Annual Conference of TSOP, Meeting, Ulaanbaatar, Mongolia

Date/Time	Sat, 14 September 2024	Sun, 15 September	Mon, 16 September	Tue, 17 September	Wed, 18 - Sun, 22 September
Morning	Cultural Field Trip	*Registration *Workshop 1: Shale Reservoirs, Prof Marc Bustin, Dr Amanda Bustin, with Mr John Hattner & Dr Jim Davidson *Workshop 2: Critical Minerals, Prof Shifeng Dai	Technical Sessions	SPECIAL SYMPOSIUM: GEOLOGICAL ISSUES OF MONGOLIA AND ADJACENT REGION (GIMAR)	POST-CONFERENCE FIELD TRIP
Mid-Day		LUNCH	LUNCH	TSOP Buisness Lunch	
Afternoon		*Workshop 1: Shale Reservoirs, Prof Marc Bustin, Dr Amanda Bustin *Workshop 2: Critical Minerals, Prof Shifeng Dai	Technical Sessions	Technical Sessions Closing Remarks and Awards	
Evening		*Registration *Ice Breaker *Council Meeting	*Student Drinks Function *TSOP Conference Dinner	*Pre-field trip briefing with participants	

The meeting will be held at the 5-star Best Western Premier Tuushin (BWP) Hotel, which is situated in central Ulaanbaatar, close to the main square and parliament building. It's also close to shops and other hotels of various prices. See the website for details of other hotels as well as pick up service from the airport to where you will be staying.

BWP has reserved **20 rooms for TSOP participants** at an excellent price, but you have to book before the **20th of August**; those rooms are surely going to go fast. For more information go to: <https://tsop-2024.com/hotel-information/>. To check out the venue and hotel you can also go to: <https://bestwesternmongolia.mn/>.

Before the main two days of technical sessions, there are several events. Firstly, we have two workshops, one is a two-day (14th & 15th September) course on Shale gas/Shale Oil by Marc Bustin, Amanda Bustin, John Hattner, and Jim Davidson. The first two instructors are from University of British Columbia, Canada and the latter two are from NSAI & Associates, USA (<https://tsop-2024.com/workshop/>). The second workshop (15th September) is a single day on Critical Minerals in Coal by Shifeng Dai, China University of Mining and Technology, Beijing.

On the 14th of September we also have a one-day cultural field trip for those of you who arrive early but aren't taking the first workshop (<https://tsop-2024.com/pre-conference-cultural-field-trip/>). During the evening of the 16th of September we'll have the TSOP Dinner at a local venue highlighting Mongolian culture and life.

Finally, there is [the 5-day field trip](#). We've written up some things on the website (<https://tsop-2024.com/post-conference-field-trip/>) and will update that soon too. Recently, we completed a pre-run of the field trip and we can promise you a wonderful experience over the four nights we'll be in the field. The trip will cover a lot of Central Mongolia and we'll visit a couple coal mines, an oil shale area, Cretaceous and Jurassic rift basins as well as the spectacular Flaming Cliffs, where the first next of dinosaur eggs were found in the late 1920s.



*Sand dunes in front of an alluvial fan under the Bogd Mountain range
(photograph by Tim A Moore, during the pre-run of the post-conference field trip; May, 2024)*

Remember to Register (**Early Bird prices end 1 July!**) and get those abstracts in (also required by 1 July!).



*Horses under the hills of the Bogd Mountain range
(photograph by Tim A Moore, during the pre-run of the post-conference field trip; May 2024).*

See you in Mongolia!

Erdenetsogt ('Tsogo') Bat-Orshikh & Tim A Moore

On Behalf of the Organising Committee

2024tsop@ciphercoal.com

<https://www.tsop-2024.com/>

ATLAS OF MICROSCOPIC IMAGES OF BIOCHAR: USING REFLECTED LIGHT MICROSCOPY IN BIOCHAR CHARACTERIZATION

Agnieszka Drobniak, Maria Mastalerz, William W. Knauth, Omid H. Ardakani, Telma Ataíde dos Santos, Valdeci Caio de Faria, Tara Congo, Paul C. Hackley, Javin J. Hatcherian, James C. Hower, Henrik I. Petersen, Julito Reyes, Hamed Sanei

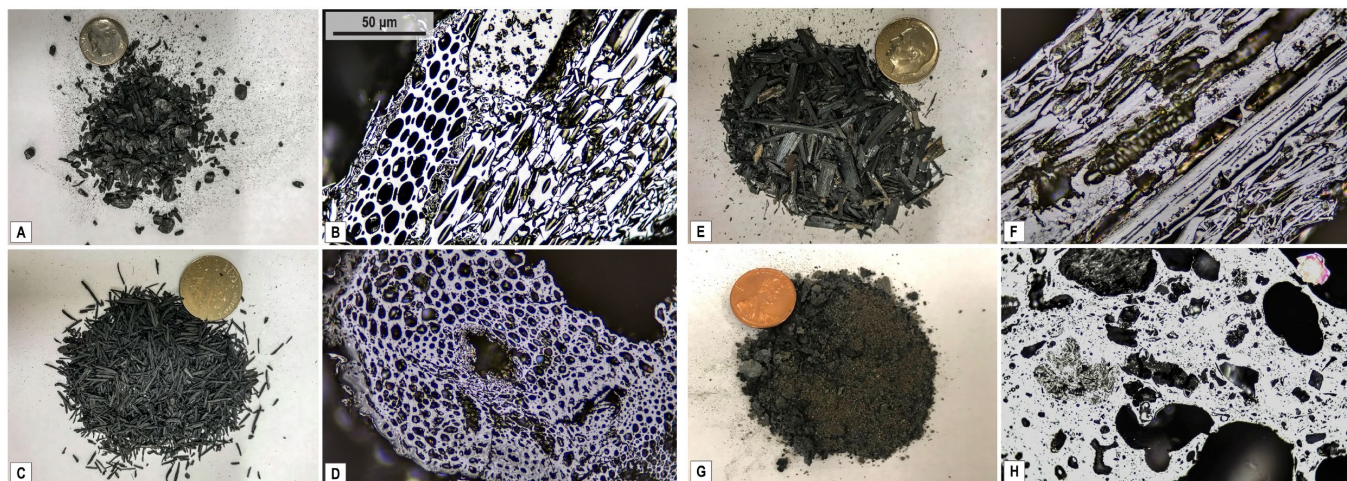
Derived through the thermochemical conversion of biomass, biochar is a carbon-rich substance recognized for its significance in environmental applications and sustainable agriculture. As interest in its utilization continues to rise, it becomes crucial to comprehend how the source material and pyrolysis parameters influence the properties of biochar and, consequently, to research the suitability of various analytical methods for characterizing it. Despite the current utilization of numerous physical and chemical methods, the untapped potential of reflected light microscopy warrants further exploration.

This manuscript links to an online atlas stored on IGWS Digital Collections hosted by the Indiana Geological and Water Survey at Indiana University, Bloomington, USA.

[CLICK HERE TO VISIT THE ATLAS](#)

While a few recent studies suggest a correlation between certain microscopic characteristics and selected physical and chemical properties of biochar, the data are limited and difficult to compare. This is primarily due to variations in the types of original biomass used and lack of information about pyrolysis conditions. Moreover, because only a limited number of photo-graphs taken under a reflected light microscope are publicly available to-date, it is difficult to evaluate morphological differences between various biochars and other organic materials such as inertinites from coal, charcoal, etc.

To address limited availability of publicly available data, this “Atlas of Microscopic Images of Biochar” presents a collection of more than 300 images contributed by researchers from Poland, the United States, Canada, Australia, Brazil, and Denmark. These photomicrographs capture optical characteristics of a diverse array of biochar, demonstrating its unique morphological and structural features. This visual documentation can serve as a valuable resource for researchers, industry professionals, educators, and enthusiasts interested in investigating the complexities of biochar forms.



VARIATIONS IN MICROSCOPIC PROPERTIES OF BIOMASS CHAR: IMPLICATIONS FOR BIOCHAR CHARACTERIZATION

Maria Mastalerz, Agnieszka Drobniak, David Briggs, John Bradburn

International Journal of Coal Geology 271 (2023) 104235

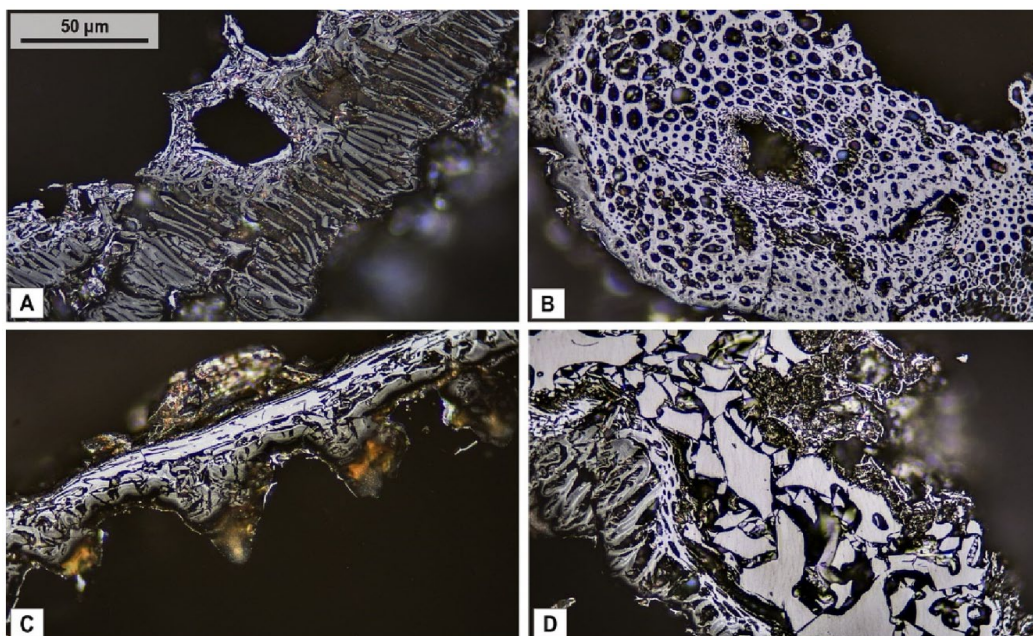
<https://doi.org/10.1016/j.coal.2023.104235>

Biochar, a carbon-rich material produced during the thermochemical conversion of biomass, is considered to be an important material for environmental applications and sustainable agriculture. With interest in its use growing, it is essential to understand how pyrolysis parameters control biochar properties and, subsequently, which analytical methods can be applied effectively in characterizing biochar. While various methods are already in use, the potential of reflected light microscopy analysis has not yet been widely explored.

This paper focuses on examining the microscopic properties of various biochars by implementing reflected light microscopy and assessing whether this technique has the potential to deliver quick, reliable, and essential information for biochar characterization. To support microscopic observations, selected physical (density and surface area) and chemical parameters (carbon and sulfur content, functional group distribution) of biochar samples were also determined.

Megascopically and microscopically, there is a considerable difference among biochars of different feeds, including their size and shape, porosity, ratio of the abundance of cellular to non-cellular pores, inorganic matter content, the ratio of thick-walled to thin-walled inertinite, or the ratio between high-reflectance inertinite to low-reflectance inertinite and their reactivity. The biochars studied also showed variations in the oxygenated groups contribution, a wide range of carbon content (14.7 to 98.8%), density (1.45 to 2.47 g/cm³), and surface areas (from <1 to 363.6 m²/g).

Our results demonstrate that microscopic characteristics and reflectance of biochar can provide crucial diagnostic value for predicting biochar properties and, in combination with other physical and chemical properties, help to enhance information about the biomass conversion process and potential practical use of biochar.



ABOUT TSOP

The Society for Organic Petrology (TSOP) is a non-profit organization for scientists and engineers involved with coal petrology, kerogen petrology, organic geochemistry, and related disciplines. The Society organizes an annual technical meeting, provides funding for students' research, and travels and sponsors research projects. TSOP is an AAPG-affiliated society. Please find us on [Facebook](#), join the [LinkedIn](#) group, and visit our [website](#) to learn about our history, bylaws, goals, events, and membership.



TSOP incorporated as a non-profit organization in the state of Virginia, USA, in 2008. Following application in June, 2009, the US Internal Revenue Service granted recognition of 501(c)(3) tax-exempt status on February 9, 2010. Classified as a public charity, TSOP is exempt from U.S. Federal income tax, and U.S. contributions to TSOP are tax deductible (section 170 of the Code). TSOP is also qualified to receive tax deductible bequests, devises, transfers, or gifts (sections 2055, 2106, or 2522 of the Code).

TSOP NEWSLETTER SUBMISSIONS

TSOP publishes a quarterly newsletter that is available free of charge. Articles, reports on meetings, photos, events, or job postings are welcome. Items for the newsletter may be submitted to the TSOP Editor [Biao Fu](#).

TSOP Newsletter Submission Deadlines:

December Issue: December 5th,
March Issue: March 5th
June Issue: June 5th
September Issue: September 5th

TSOP MEMBERSHIP DUES

TSOP dues payments are due on **December 31st each year**. Please use the quick links below to check your membership status and make your payment. Please direct your questions to TSOP Treasurer [Agnieszka Drobnia](#).

Professionals:

\$25 per year or
\$100 for 5 years (5 years for the price of 4!)

Students: \$15 per year

Institutional/Corporate: \$75 per year

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