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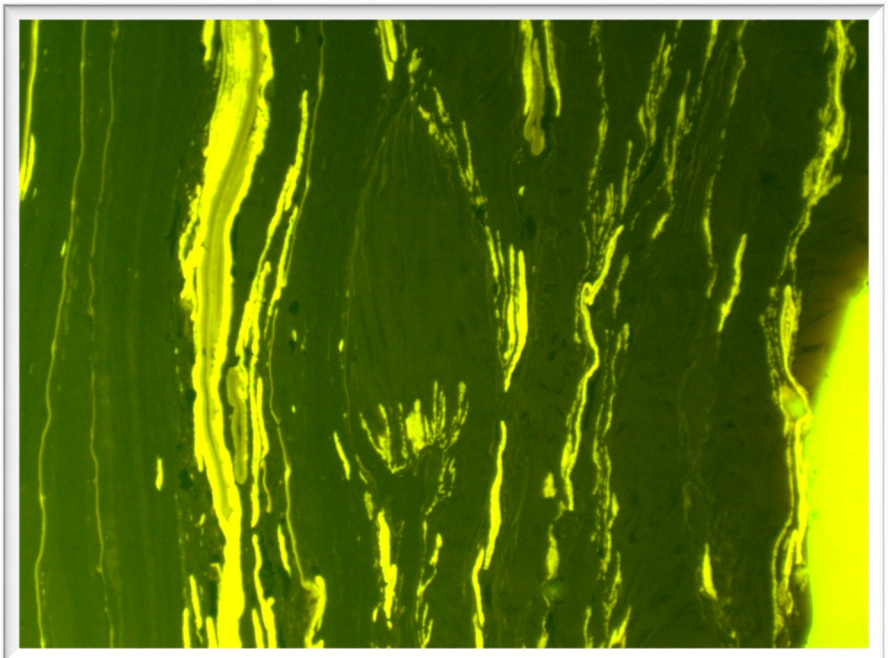
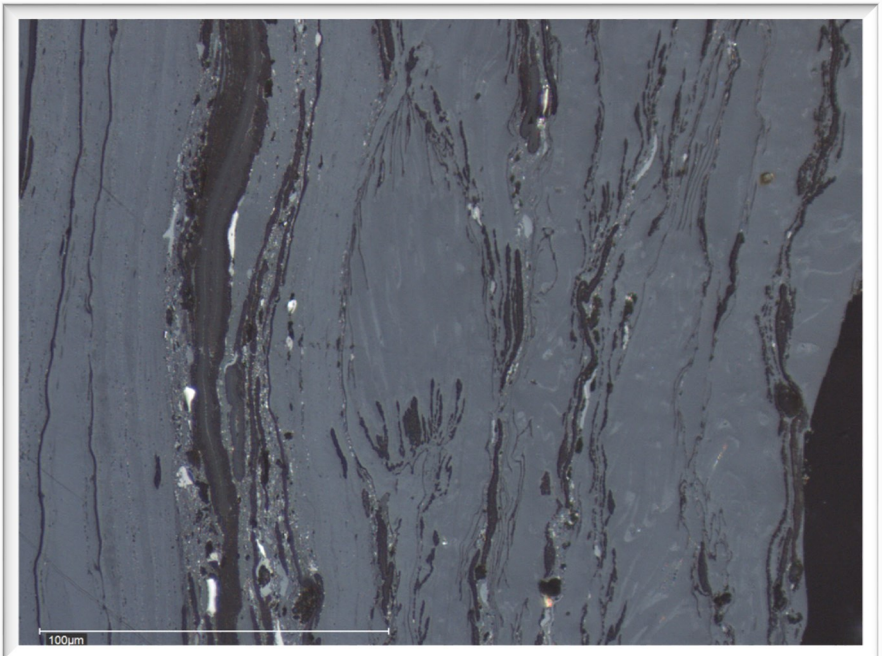
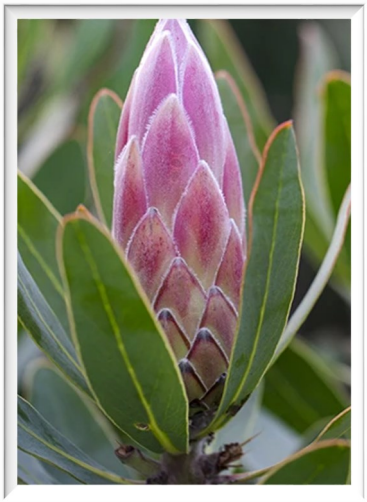




THE KING PROTEA, THE NATIONAL FLOWER OF SOUTH AFRICA



IN THIS NEWSLETTER

INSTITUTIONAL MEMBER

SERVICIO GEOLÓGICO COLOMBIANO

ICCP WEBSITE

https://www.iccop.org

Please send any feedback, comments, and uploads to Stavros Kalaitzidis

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, Mária Hámor-Vidó hamorvido@gmail.com

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

EDITORS COLUMN

Dear All,

At the time of compiling the ICCP Newsletter in April, the world was in turmoil. Lockdowns were in place globally in attempts to curb the spread of the COVID-19 virus. Six months later, the seasons have changed again. In many countries, some form of lockdown is still in place. The total number of recorded COVID-19 related deaths globally is 930 902 (rest in peace), and the total number of cases is 29 345 511, with 21 170 590 recovered cases (14 September, 2020). It appears as if we are through the worst of the pandemic in South Africa, although numbers rose rapidly through August placing the country for many weeks at 5th in the world for recorded cases. Fortunately, we recorded a comparatively low death rate in SA. I hope that all ICCP members and families in your respective countries have remained safe and healthy.

The ICCP community were due to meet in China in September 2020, but with global travel restrictions largely still in place, the decision to postpone the Xuzhau Meeting remains the correct option. I have participated in a number of online conferences and workshops recently. A significant benefit of these is that a number of international people were able to participate. People who would not normally have been able to travel to South Africa for a one day event are now able to join online from their living-room or home-office anywhere in the world. This is certainly a positive outcome of the lockdown, and possibly something the ICCP could consider for future meetings. I certainly would not like to replace the physical meeting, but travel to the meeting destination is not always possible with university teaching commitments and budget constraints. If the ICCP Meeting was able to develop a blended approach, with live online sessions streamed during the Plenary and General Assembly, and Commission meetings, we open up the opportunity for more members to 'attend'. The social side of the ICCP meeting can never be replaced (virtual beers just don't taste the same). Social interaction makes our organization the close, friendly community it is. But, physical meetings with online streaming may be something to consider going forward?

I am so excited that this Newsletter has a number of student contributions. This is something I have been asking for many years – thank you Sandra, Joan, and Stavros for encouraging your students to contribute. I am certain that there are many other students who completed their research during lockdown and can contribute a synopsis. Please do engage with these articles, and post any questions or comments that arise.

All the best, Nikki Wagner (nwagner@uj.ac.za)

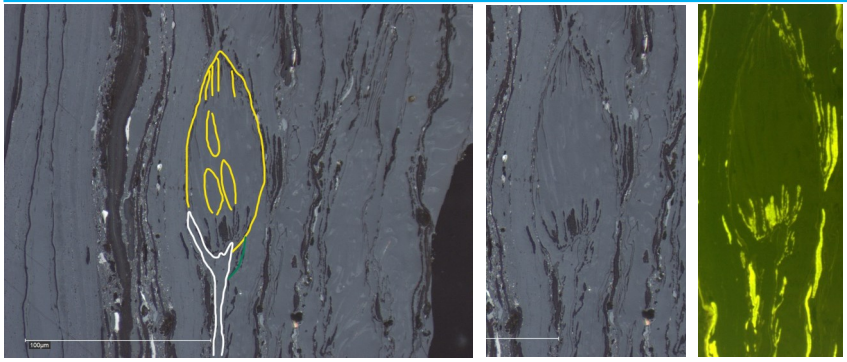
KNOW YOUR COAL PETROGRAPHER……

(page 7)

Image courtesy of Jim Hower

IMAGE ON FRONT COVER:

The national flower of South Africa is the King Protea. It bears an uncanny resemblance to the feature determined in a Permian South African coal I recently analyzed. Isn't it amazing what we can 'find' in coal!



PRESIDENTS COLUMN

Dear Colleagues,

One issue more of our newsletter and the world is still in a difficult situation due to the Covid-19 pandemic. Many of our members are from countries where the number of cases is very high and it is clear that we still do not know how to keep it under control. In this context I was lucky of being able to travel to Germany for a short time and enjoyed the chance to meet Angelika and Heike there.

The activities of the ICCP have been strongly impacted by the travel limitations since we had to postpone our annual meeting, Nevertheless the activities of the working groups and the Accreditation Programmes are in progress and I would like to encourage all the membership to take part in the activities.

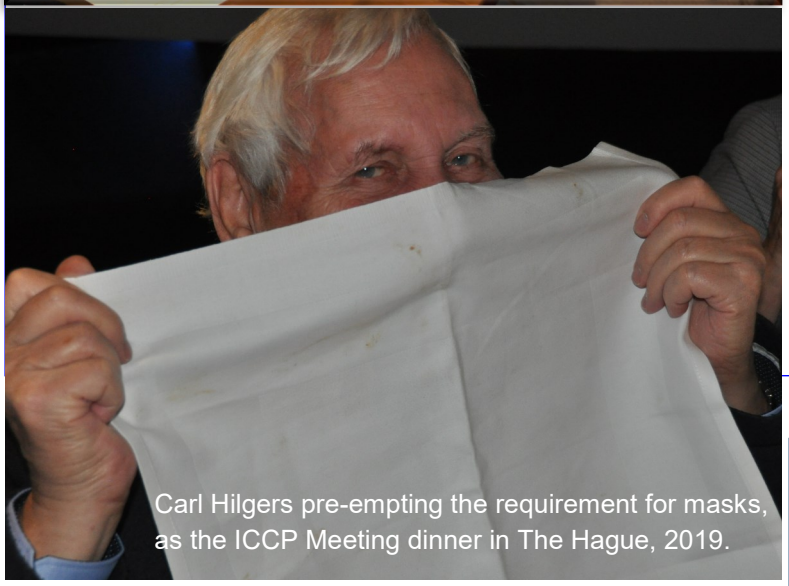
We have a reason for joy. A well-deserved Reinhardt Thiessen Medal Award went to Maria Mastalerz, Congratulations Maria!! We are also pleased to welcome in our organization Emilie Loustaunau from Total and encourage her as well as other recent members to participate in the WGs activities. We all have acquired new skills with remote working that can be used to strength the exchange within the working groups.

Best wishes,

Angeles

Angeles was fortunate to meet up with Angelika Vieth and Heicke Liszio in Krefeld, Germany, in August, when they all attended the same course.

As we are not meeting in person this year, please do send me any pictures of gatherings in your countries or regions. We can share pictures of our petrographic 'family' and stay in touch.



Carl Hilgers pre-empting the requirement for masks, as the ICCP Meeting dinner in The Hague, 2019.

Waiting …. for the next ICCP Meeting.

Hope to see you all in Prague in 2021!

Correction to the Minutes included in the ICCP Newsletter 75

Please note the following:

7. Elections
Resolution ICCPC19/7/1. Council nominates the following candidates for election/re-election.
Dr. Stavros Kalaitzidis (Chair Commission I),
Dr. Dragana Zivotic (Secretary of Commission I).
Dr Dr Mária Hamor-Vidór (General Secretary).

Replaced with:

7. Elections
Resolution ICCPC19/7/1. Council nominates the following candidates for election/re-election.
Dr. Stavros Kalaitzidis (Chair Commission I),
Dr. Dragana Zivotic (Secretary of Commission I).
Dr Dr Mária Hamor-Vidór (General Secretary).
A second candidate for Secretary of Commission I Nils Keno Lünsdorf was nominated from the Floor of the General Assembly.

REMINDER: HAVE YOU PAID YOUR MEMBERSHIP DUES?

Update your details online—but please let the Editor have your new email address—otherwise you will miss the next edition of the ICCP Newsletter. Contact Peter Crosdale for all membership payments (peter.crosdale@energyrc.com.au).

CONTRIBUTIONS TO THE NEXT ICCP NEWS BY 30 Nov 2020

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 MEMBERS: ASSOCIATE MEMBER

Emilie LOUSTAUNAU

emilie.loustaunau@total.com

Total SA

Avenue Larribau, 64018, Pau

Phone 05.59.83.59.66

Ms Loustaunau is an organic petrographer and geochemist working on sedimentary organic matter. She currently works for Total SA (since 2007), and was previously employed in the research group at Arkema. Ms Loustaunau is accredited in the DOMVR accreditation program. Her skills in organic petrology and liquid chromatography analysis on oils, rocks and gas make Ms Loustaunau a valuable ICCP member. **WELCOME**

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. Only Full Members may vote.

As we will not have a microscope session this year (due to the cancellation of the ICCP Meeting), please do send any images for discussion to the Newsletter. And prepare samples for discussion in 2021.

Reinhardt Thiessen Medal awarded to Maria Mastalerz

This is the highest award offered by the ICCP. The award consists of a bronze medal and a certificate, and is presented at the Annual ICCP Meeting. The award committee consists of the five most recent medalists who are available. Awards are made from time to time, but applications are called for every 2 years.

In 2020, the Reinhardt Thiessen Medal Award Subcommittee nominated Adjunct Associate Professor María Mastalerz to receive the Medal in 2020. The selection was unanimously supported by Council. The official award ceremony will take place in Prague 2021 as unfortunately the 2020 ICCP Meeting has been deferred due to the Covid-19 crisis.

Prof Maria Mastalerz, Reinhardt Thiessen medal awardee 2020.

Prague, 2021

NEXT ICCP MEETING: 2021, Prague, Czech Republic

Watch this space for further information

Natural gas occurrence in Parnassos-Ghiona geotectonic unit: Nature's "black magic" behind Pythia's myth

Maria-Elli Damoulianou and Stavros Kalaitzidis; Department of Geology, University of Patras, Rio-Patras, Greece

Throughout the ages, Greece has always been famous about its myths, reflecting, in many cases, natural processes that men discovered and then recreated in the enchanting yet humane entity of fables, so as to embrace the unexplainable. However, an attempt to discover nature's both complicated and simple mechanisms behind the spectacle could, as well, be a magical journey. Under this prism, scientific research suggests that the prophetic abilities of Pythia, who resided in the Apollo Temple of Delphi, were caused by the intoxicating effect of aromatic hydrocarbons, which were back then vaporing through a fault passing right underneath the Temple (De Boer et al., 2001; Etiope et al., 2006).

The area of Parnassos-Ghiona Unit in Central Greece, the place which hosted Pythia and her mythical oracle, is structured predominantly by Mesozoic neritic limestones, which occasionally host bauxite lenses, as well as organic-rich strata (Carras, 1995). Within the frame of a doctoral thesis, thin coal layers, as well as "bituminous" limestone of Turonian-Senonian age are being studied by means of organic petrology and geochemistry. The aim of the study is the evaluation of the palaeoenvironmental setting of the organic-rich intervals, as well as the assessment of the hydrocarbon potential of the Late Cretaceous Formations within Parnassos-Ghiona Unit.

So far, the data reveals that, during the Upper Cretaceous transgression phase mires, as well as shallow-marine basins with limited water circulation, were established. In this context, accumulation of mostly herbaceous plants, with elevated contribution of detrovitrinite and inertinite, and variable amounts of liptinite provided the low/very low grade humic coals that occur on the top of several karstic bauxite traps. Rock-Eval data indicate the co-occurrence of all kerogen types, with those of III and IV generally prevailing. Additionally, both the coal-petrography and Rock-Eval analysis suggest Medium Rank (D-C) Bituminous coals and, in terms of hydrocarbon generation, early to peak oil-window stage.

Although the preliminary data supports a good-to-excellent gas potential and a limited oil potential for Parnassos-Ghiona Unit, more outcrops and underground sections need to be studied in order to produce a model of the organic matter accumulation, burial history and trap mechanisms in the Upper Cretaceous organic-rich interval. Nevertheless, the recognized carbonaceous and coaly lithologies seem to satisfy the source-features of the Delphi reported natural gas. The remaining question is if similar strata occur in the deeper parts of the area.

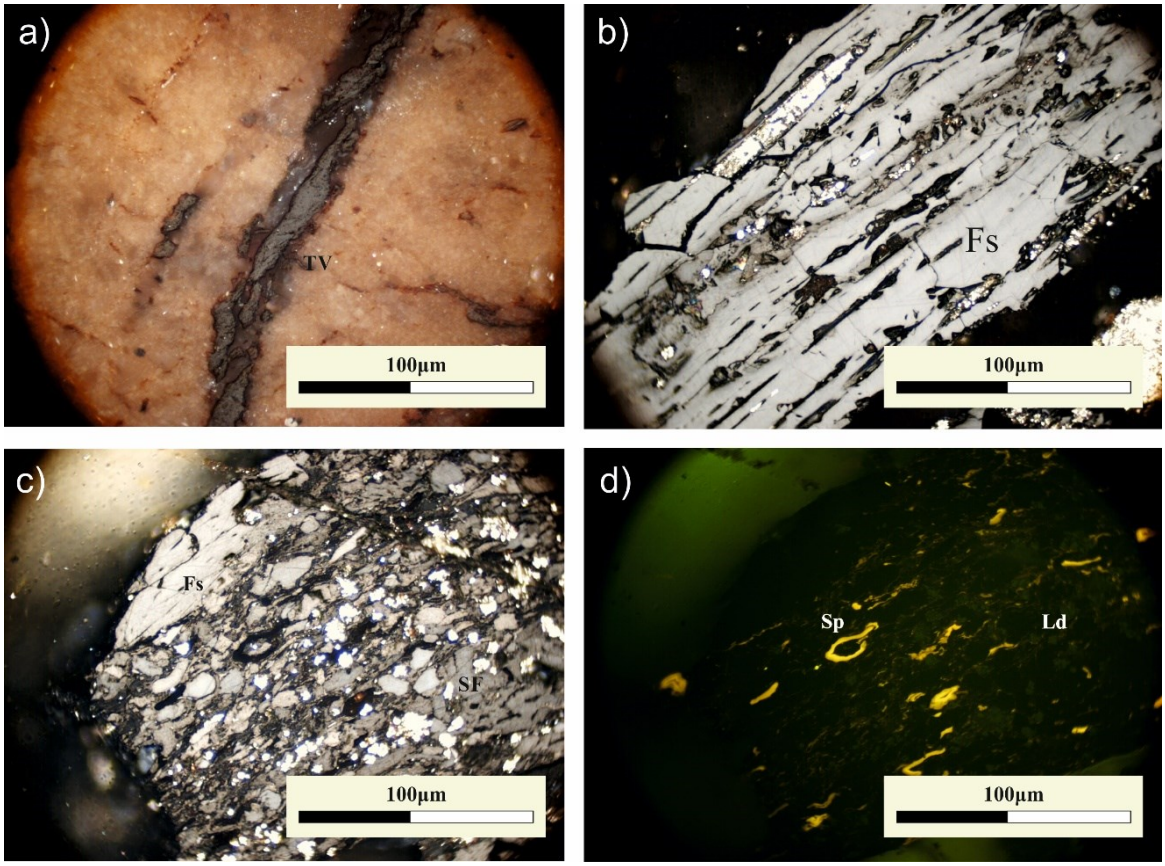


Figure 1. Photomicrographs taken under white incident light and blue-light excitation, oil immersion, magnification x500: a) Telovitrinite (TV, VR_r~0.55%) within "bituminous" limestone; b) Fusinite (Fs) with pyrite infilling in a coal sample; c) Fragmented texture of coal samples, comprising fusinite, semifusinite (Sf) and liptinite; d) Same field under blue light excitation, indicating the presence of sporinite (Sp) and liptodetrinite (Ld).

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Etiope, G., Papatheodorou, G., Christodoulou, D., Geraga, M., Favali P., 2006. The geological links of the ancient Delphic Oracle (Greece): a reappraisal of natural gas occurrence and origin. Geology, 34, 821-824. https://doi.org/10.1130/G22824.1.

Palynology of the Jurassic–Cretaceous transition, northern Surat Basin, Queensland, Australia

Jennifer J. Cooling
The University of Queensland, School of Earth and Environmental Science, St Lucia, Queensland, Australia

The terrestrially deposited Gubberamunda Sandstone and Orallo Formation of the Surat Basin, represent the most complete Late Jurassic–Early Cretaceous sedimentary sequence in Queensland. This thesis presents the results of a palynological and geochronological study of these formations, and the underlying upper Westbourne Formation and overlying lower Mooga Sandstone. An improved understanding of the palynostratigraphy of this interval will enable future workers to more accurately correlate and date strata both within and beyond the Surat Basin.

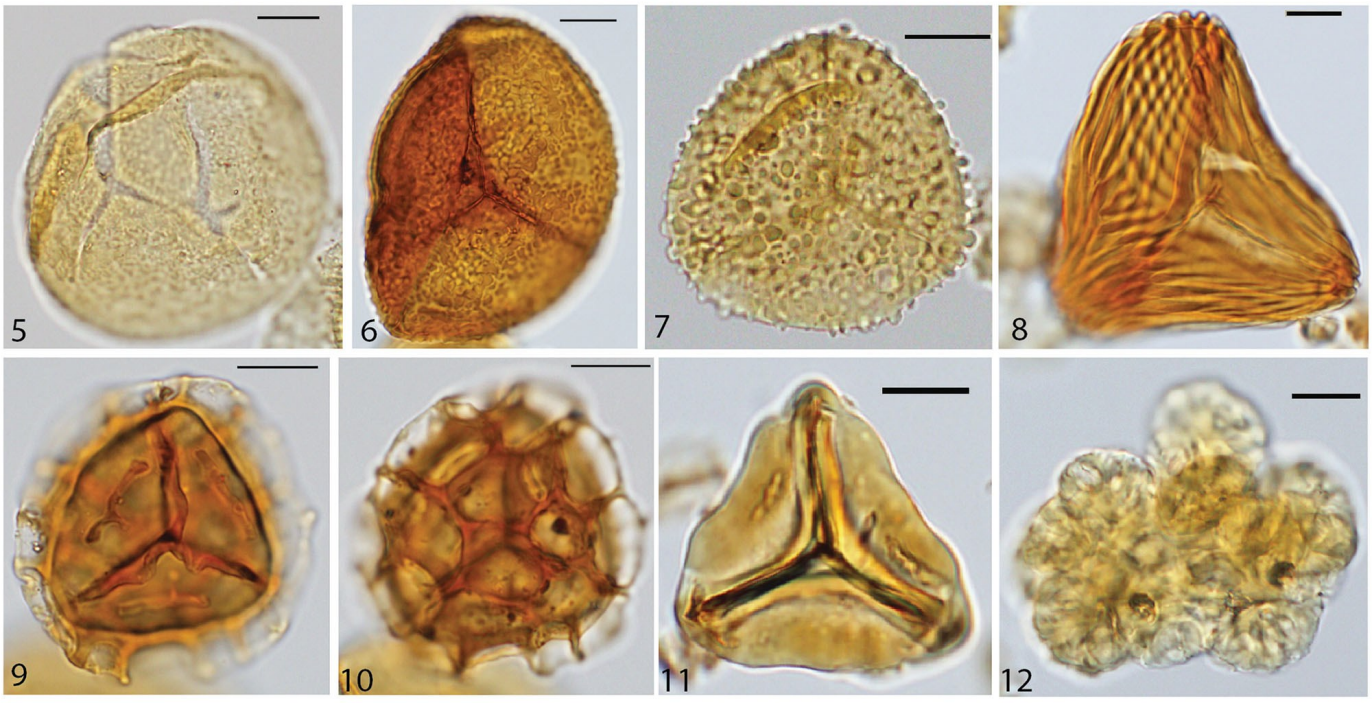
Samples were taken for biostratigraphy and geochronology from three Geological Survey of Queensland (GSQ) stratigraphic boreholes located in the northern Surat Basin. These were GSQ DRD 26 in the west, GSQ Roma 2 in the center of the basin and GSQ Dalby 1 in the east. A systematic taxonomic survey of 89 biostratigraphic samples from the three boreholes identified a diverse palynoflora with 216 taxa identified. These included both in-situ and reworked (latest Carboniferous–Early Jurassic) spores and pollen, as well as palynomorphs of algal, fungal, acritarch and unknown affinities. Of these, six are new: *Dictyotosporites esterleae, Retitriletes thomsonii, Rugulatisporites johniorum, Camarozonosporites dorsus, Contignisporites confractus* and *Aratrisporites woodii*. One new combination of *Dictyotosporites rugulatus* (Sajjadi & Playford) is proposed herein.

Palynological samples from the upper Westbourne Formation and the lower Gubberamunda Sandstone yielded palynofloras assignable to the *Retitriletes watherooensis* Association Zone while those from the upper Gubberamunda Sandstone to the lower Mooga Sandstone were assignable to the *Ruffordiaspora australiensis* Interval Zone. Furthermore, Subzone APJ6.2.2 of Price (1997) is herein formally described and recognized in the Surat Basin as the *Foraminisporis dailyi* Interval Subzone. The validity and use of Subzones APJ6.2.1 and APK1.2.1 (Price 1997) in the Surat Basin are also recognized, but as they were not encountered in their entirety during this study, they are only provisionally described as the *Neoraistrickia equalis* Interval Subzone and the *Nodosisporites* spp. Interval Subzone. Based on taxon ranges from this study and Burger (1974), Subzone APK1.2.2 does not appear to be applicable in the Surat Basin succession.

The geochronological samples yielded two U-Pb Chemical Abrasion-Thermal Ionizations Mass Spectrometry (CA-TIMS) ages from the upper Orallo Formation of 134.38 ± 0.04 Ma (late Valanginian) from GSQ DRD 26 and of ≤132.46 ± 0.36 Ma (early Hauterivian) from GSQ Roma 2. On this basis the Gubberamunda Sandstone is determined to be of Tithonian–Berriasian age and the Orallo Formation to be of (?)Berriasian/Valanginian–Hauterivian age. Accordingly, deposition of the Bungil Formation, which overlies the Mooga Sandstone, cannot have begun prior to the Hauterivian (Cooling et al. 2020).

Analysis of the sampled palynofloras showed that during the Tithonian–Hauterivian the Surat Basin flora remained relatively unchanging with no major floristic turnovers. This flora consisted of diverse ferns, conifers, lycopods, bryophytes, seed ferns and some variety of ginkgoes, cycads and/or gnetales (Figure 1). This flora is interpreted to have grown under humid, warm-temperate conditions and to have been deposited in floodplain or backswamp facies.

Figure 1: A partial reproduction of Figure 4 from Cooling et al (2020) showing a selection of palynomorphs from that study, the scale bar is 10 µm in all images. 5. Osmundacidites wellmanii Couper 1953. 6. Rugulatisporites neuquenensis Volkheimer 1972. 7. Verrucosisporites varians Volkheimer 1972. 8. Ruffordiaspora australiensis (Cookson) Dettmann & Clifford 1992. 9, 10. Retitriletes



austroclavatidites (Cookson) Döring et al. in Krutzsch 1963. 11. Gleicheniidites senonicus Ross 1949. 12. Botryococcus spp.

References (article by J Cooling)

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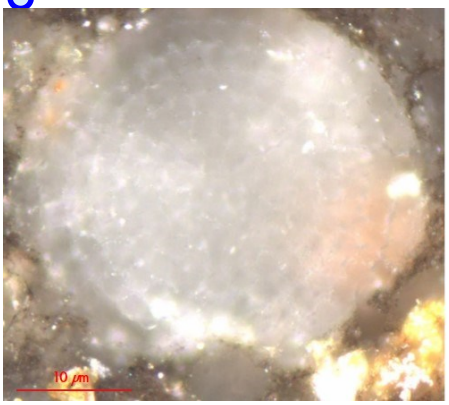
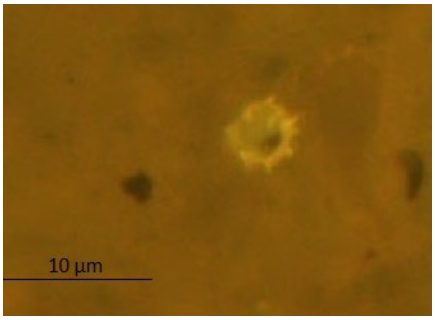
LET'S SHARE PETROGRAPHIC IMAGES!



Above: Siliceous microfossil (radiolaria), U. Cretaceous, Peru.



Above: Acritarch, U. Devonian, Bolivia

Coronainite?

Images shared by George Siavalas.

Take time to look through your images and submit your most comical, imaginative, or beautiful. Perhaps we can even consider a competition?????

George Siavalas has volunteered to run a competition—but we need submissions please.

Send all photographs and short caption to nwagner@uj.ac.za.

SPACE SAVED FOR YOU TO SEND IN YOUR PETROGRAPHIC IMAGES !

Know your coal petrographer

PROFESSOR ERICH STACH (1896—1987)

A founding father of modern coal petrology.

Professor Erich Stach was the founder of the International Committee of Coal Petrology (in 1953). He was the General Secretary and then President until 1971. Dr van Krevelen, Prof Potonie, and Dr Seyler were involved in the first meeting in Geleen, Netherlands, in 1953. In 1964, Prof Stach was awarded the Reinhardt Thiessen Medal (refer to ICCP Newsletter 67 for more information on the medal).

Born in Berlin, Prof Stach studied geology, mineralogy, and geochemistry at the Friedrich Wilhelm University in Berlin. When not undertaking mapping, Prof Stach worked on coal petrological problems before the 2nd World War.

Recognized as a brilliant orator, Prof Stach travelled through Europe and lectured on coal petrology. From 1947 to 1961, he headed the large department of Coal Petrology within the Geological Survey of Northrine-Westphalia. Even after retirement, Prof Stach continued with his research on microscopic studies of coal.

The first edition of 'The textbook of Coal Petrography' was published in 1935. The 'Atlas fur angewandte Kohlenpetrographie' was published in 1951. 'Stachs' Textbook of Coal Petrology' was written in English and published in 1975 and 1982. These books certainly have been the 'go-to' book for many trainee petrologists, and remain relevant today. Full references: Stach's Textbook of Coal Petrology by E.Stach, M.-Th. Mackowsky, M. Teichmuller, G.H. Taylor, D. Chandra, R. Tecihmuller. Gebruder Borntrager, Berlin, Stuttgart, 1975, 428 p.); Stach's Textbook of Coal Petrology by E. Stach, D. Murchison, M.-Th. Mackowsky, M. Teichmuller. Gebruder Borntrager, Berlin, 1982, 535 p.

Prof Stach introduced polished grain mounts, relief– and plane-polishing techniques, and oil immersion objectives for coal petrography. This enhanced the examination of the heterogeneity of coal.

(Ref: Kwiecinska, B., Mineralogia Polonica vol 20, 1989).

An investigation of phosphorus and fluorine distributions and their hosts, Late Permian Coal Measures, Bowen Basin, Australia

Brooke Davis
The University of Queensland, School of Earth and Environmental Sciences, St Lucia, Queensland, Australia

Phosphorus (P) and fluorine (F) are potentially deleterious trace elements in coking and thermal coal products that can be difficult to reduce through conventional beneficiation strategies (Esterle, 1999; Finkelman et al., 2002; Partridge et al., 1992). Previous studies of P and/or F have shown bulk contents can vary at the minescale and that these elements may be hosted by several different inorganic minerals — e.g. apatite, illite, kaolinite, muscovite etc. (Dai et al., 2015; Davis, 2006; Eskenazy et al., 2013; Finkelman, 1980; Kang & Li, 2016; Ward et al., 1996) — and may hinder predictability or beneficiation efficiency.

Therefore, using the Late Permian coal measures of the Bowen Basin as a test case, (from youngest to oldest) Rangal Coal Measures (RCM), Fort Cooper Coal Measures (FCCM) and Moranbah Coal Measures (MCM) and equivalents, research by Davis (2020) sought to determine the hosts, modes, source and mechanisms (Figure 1, opposite page) of the bulk P and F contents in coal seams to improve in situ predictability and assist with their management during mining, processing and utilisation. This was achieved by investigating the bulk assay data and potential P and/or F mineral hosts relative to stratigraphy and geological setting. With laboratory geochemical investigations including X-ray spectroscopy, infrared spectroscopy and spectrometry were conducted to evaluate the potential hosts (Davis, 2020; Davis et al., 2020).

The results of this study show that the bulk P and F contents appear to be independent of other common coal quality parameters such as total inertinite, coal rank and ash — thus limiting their in situ predictability. Regionally, three statistically valid trends are evident in the data — Trend 1 (high F, low P); Trend 2 (proportional F and P); and Trend 3 (low F, high P). The proportional F and P shows a stratigraphic increase with inertinite-rich coal measures, but is not predictable at the minescale. Laboratory micro-geochemical investigations of samples collected from these three trends confirm P and F are bound to several different mineral species within each trend — Trend 1 is dominated by illite/illite-smectite in the FCCM, Trend 2 is dominated by fluorapatite in the RCM and MCM, and Trend 3 is dominated by crandallite in the RCM. Furthermore, the fluorapatite occurs as the following four primary modes of occurrence (Figure 2, opposite page) (1) pore infill, (2) fracture infill, (3) detritus (intermixed with the lithic or coal layers) and (4) encrustations on silicate minerals.

The results of this study show that these different modes of apatite can be discriminated based on the presence of carbonate, absolute minor and trace element contents, and rare-earth and Yttrium (REY) profiles. With the similarity in the geochemical profiles suggesting that detrital fluorapatite intermixed with the lithic layers formed early from volcaniclastics, and pore and fracture fill either precipitated from or where over-printed by late-stage fluids. Overall, the variation in hosts, modes and sources of P and F would explain why the in situ predictability and beneficiation efficiency of these elements is limited in the coals studied.

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CONGRATULATIONS TO ALL STUDENTS ON SHARING THE RESULTS FROM YOUR STUDIES.

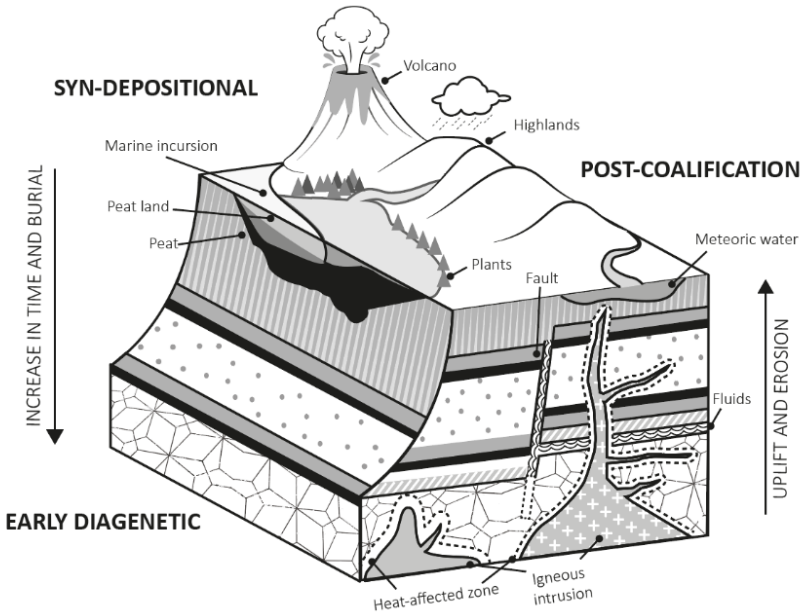
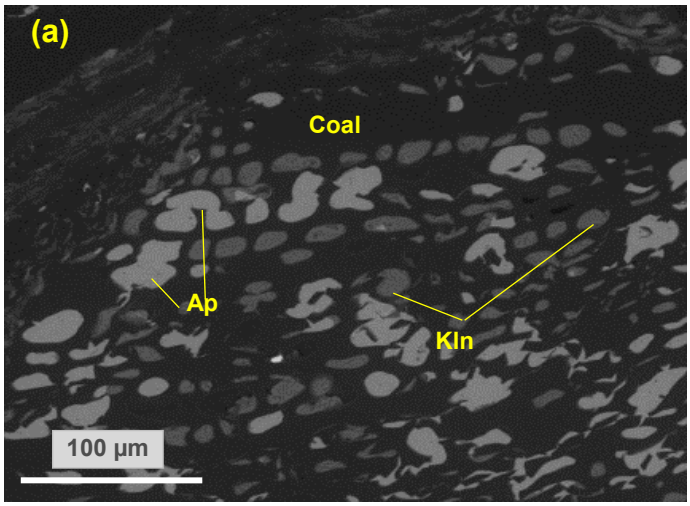
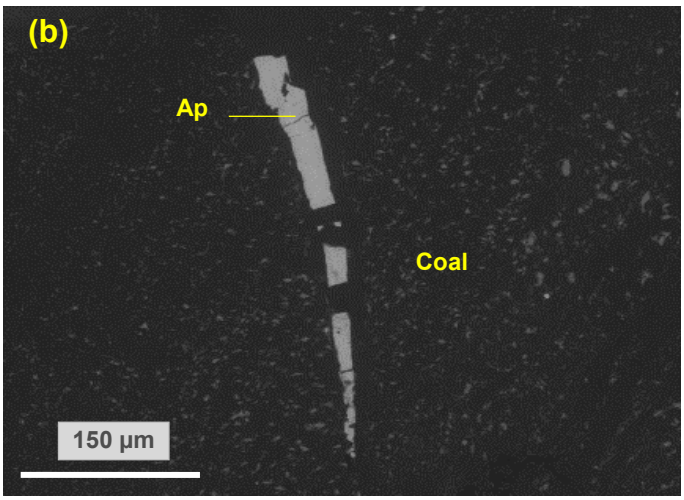
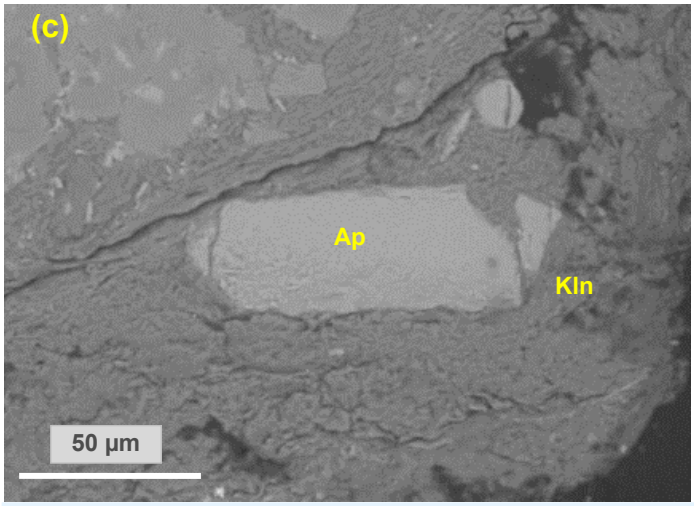


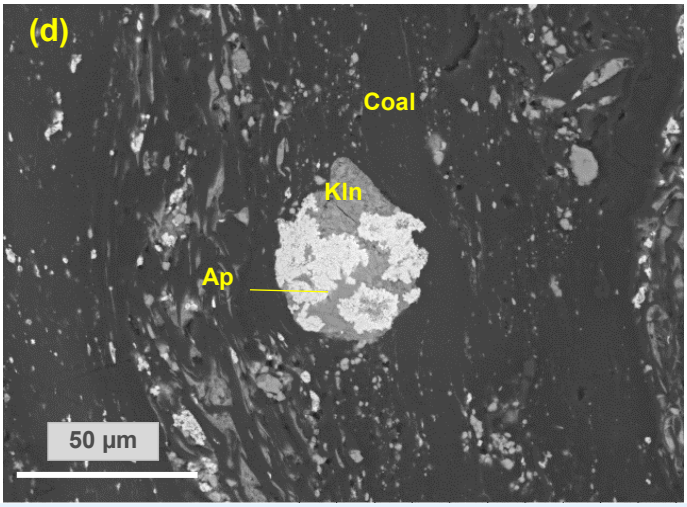
Figure 1: (LEFT) Conceptual syn-depositional, early diagenetic and post-coalification models that may influence the present-day in situ distributions of P and F within coals (Davis, 2020).

Figure 2: (BELOW): SEM BSE images of the four modes of apatite a) pore infill, b) fracture infill, c) Detritus (in this image, intermixed with a lithic layer), and d) apatite encrusting silicate minerals (in this image, kaolinite). Ap = apatite, Kln = kaolinite (Davis et al., 2020).









SMILES FROM THE ICCP MEETING IN THE HAGUE

Spatiotemporal variation in the Permian-Triassic pre- and post-extinction palynology of the Bowen and Galilee basins (Australia)

Alex Wheeler
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The late Permian coal measures of the Bowen and Galilee Basins offer great insight into climate, environments and floras of Gondwana immediately preceding the end-Permian extinction event. The main objective of this thesis was to use palynology as a tool to understand spatial and temporal variation within late Permian and earliest Triassic floras and how they interact with the palaeoenvironment. This work also examined a carbonaceous "Marker Mudstone" in the Bowen and Galilee basins that represented a potential Permian-Triassic marker bed. An additional goal of this thesis was to test the utility of an acid-free palynological processing technique on Permian-aged material for the first time. Results from comparing the acid-free processing technique to the standard acid (HF and HCl) technique showed comparable palynological assemblages and are promising for further testing (Wheeler *et al.,* in review).

In the late Permian, palynofloras show a strong proximal-distal trend with pollen-dominated alluvial and upper delta plains and spore-dominated lower delta plains. For higher resolution reconstructions, Polytopic Vector Analysis (PVA) was used to define six end-member floral communities: *Glossopteris* forest (Fig. 1) and fern understory, which are ubiquitous; lacustrine/paludal, which represents peat-forming mires and coastal pioneers (Fig. 2); coastal forests; horsetail fens; and mixed woodlands, which occupy the basin margins and uplands. Brackish and shallow marine environments were occupied by prasinophytes and acritarchs while freshwater lakes and ponds featured zygnematacean algae and *Botryococcus*.

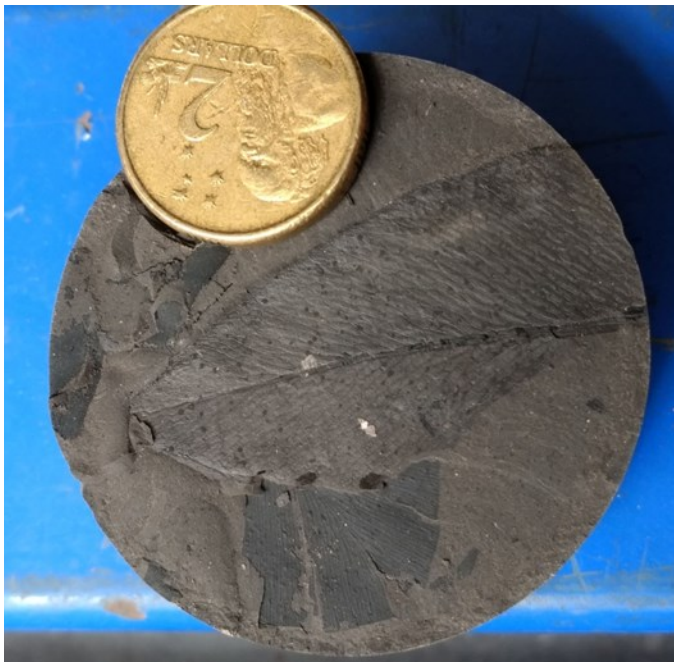

Figure 1: Glossopteris remains are common in coal and mudstone deposits. The ubiquity of their associated pollen suggests Glossopteris was tolerant of a wide variety of environments.

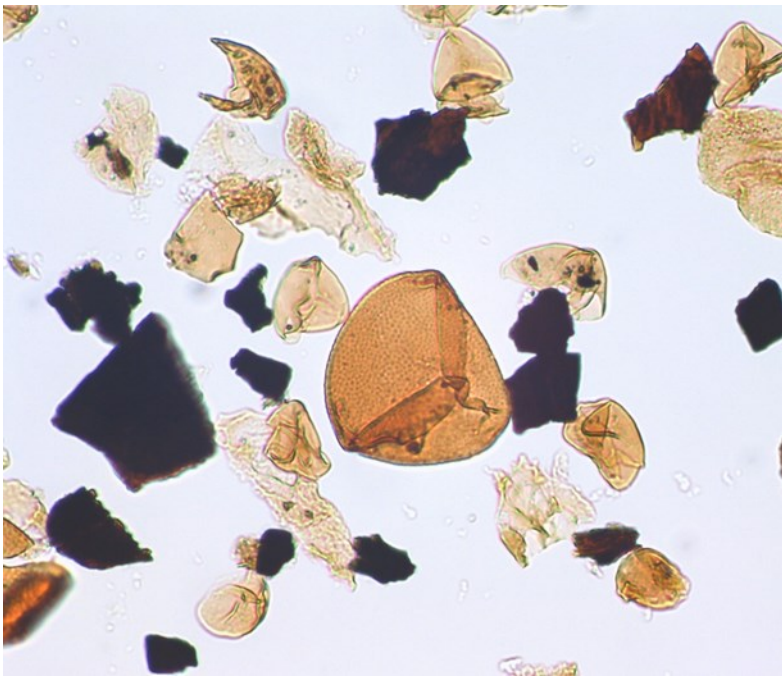

Figure 2: Palynological assemblage from an intraseam parting in the coals of the Galilee Basin showing a spore-dominated assemblage. This represents mainly ferns, some Glossopteris, horsetails and lycopods along with freshwater algae like Botryococcus in a peat-forming mire.

In the earliest Triassic, the floral turnover occurs synchronously with the cessation of coal deposition and is marked by the shift from the APP5 to the APP6 palynological zone. Paynological data indicates a flora consisting of surviving ferns and herbaceous lycopods occupying flooded areas, while colonising peltasperms and conifers from the uplands occupy more well-drained areas. The variable distribution of environmental indicators (algae, acritarchs and fungi, along with pyrite-damaged and mutated palynomorphs) indicates severe environmental perturbation. The "Marker Mudstone" identified in the Galilee Basin does not correlate with the one previously examined in the Bowen Basin, as it falls into the APP5 zone (late Permian). However, the distinct palynofacies shifts along with the presence of acanthomorph acritarchs is potentially indicative of environmental perturbation and base level rise immediately preceding the end-Permian extinction (Wheeler *et al*., 2020).

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Wheeler, A. (Unpublished PhD thesis). Spatiotemporal variation in the Permian-Triassic pre- and post-extinction palynology of the Bowen and Galilee basins (Australia). The University of Queensland, Australia.

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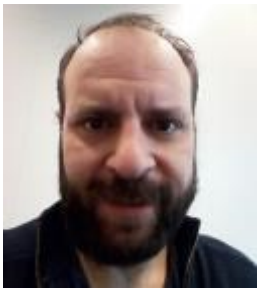

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UPCOMING EVENTS

26—30 October, 2020. GSA 2020. The Geological Society of America (virtual conference event). Community.geosociety.org.

2—5 November, 2020. 3rd Conference of the Arabian Journal of geosciences (CAJG); Sousse, Tunisia. Registration opens 31 Aug 2020. https://cajg.org/. Note: this is scheduled as an in-person conference https://cajg.org/index.php?p=registration

01—03 March, 2021: 5th International Conference on Fossil and Renewable Energy (F&R Energy-2021); Houston, TX, USA. https://energy-conferences.com/featured-speakers; https://energy-conferences.com/about; energy@uniscigroup.net

21—26 March, 2021. 10th International Freiberg Conference on IGCC & Xtl Technologies; Marriot Hotel, Shanghai, China. Originally scheduled for 20—25 September, 2020. New abstract submissions are due by 15 October 2020. www.gasification-freiberg.com; gasification@iec.tu-freiberg.de

01—03 July, 2021: International conference on Mining and Mineralogy (ICMM), Munich, Germany. The conference theme: Exploring Modern Technologies and Challenges in Mining & Minerals. http://immnetworks.com/ ; mining_conf@immcong.com

2021, 38th Annual TSOP Meeting; Sofia, Bulgaria
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