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ICCP
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On Line ISSN 1445-4858

News

No 29 July 2003

55th ICCP Meeting 2003
Utrecht, The Netherlands

Netherlands Institute of Applied Geoscience TNO
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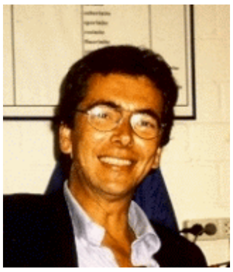

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From the Editor

For a change you will not have me complaining about a lack of contributions to ICCP News! This relatively full issue contains some new initiatives.

First and foremost has been the decision to publish extended and full reports from ICCP Working Groups. It is a real pleasure to have the reports from the Thermal Indices Working Group and the Qualifying System for Reflectance Analysis Working Group published in this edition. In keeping with the policy of publishing author's photographs wherever possible, the working group convenor's photo accompanies the article.

The benefits to members should be obvious. Working group reports have previously proven difficult to obtain unless you were at the meeting or an active member of the group or the relevant Commission. Now all ICCP members will have access to detailed information rather than just the summary information given in the minutes of the annual meetings. Since the Newsletter is permanently archived on the website, these reports can be easily accessed at a later date as required.

It is also very pleasing to be able to publish the abstract of Cristina Rodrigues' PhD Thesis. Although not the first thesis summary published in ICCP News, it is nevertheless an important step into wider dissemination of thesis work among the coal petrology community. Too much thesis information remains hidden to the wider community. I strongly encourage more contributions of this sort to ICCP News.

Preliminary agendas for the Utrecht meeting also appear in this edition. Again we pleased to be able to get these agendas, and especially the Council agenda, to the membership in sufficient time before the meeting to allow comment. It is important that members who are unable to attend the meeting let their voice be heard. I strongly encourage you to communicate your thoughts to the appropriate Commission Chair, the General Secretary or the President before the meeting.

With contributions of this quality, ICCP News will soon be more popular than Harry Potter! Keep those articles coming.

Cheers and happy reading,
Peter
ICCP Editor - mailto:Peter.Crosdale@jcu.edu.au

From the President

The summary program for Utrecht is now prepared, and I understand it will be in this Newsletter. I would like to take this opportunity both to thank the General Secretary and the Chairs and Secretaries of the Commissions for providing this and to invite you to prepare for the meeting. Attendees can contribute at the meeting, but it would make the Secretaries very happy to receive comment in writing and in advance of the meeting. For those not able to attend, this is your chance to make sure your views are considered. Contributions should be sent to the Secretary of the relevant commission or, for more general matters, to the General Secretary. It is most important that all members take the opportunity to have an effective voice in our work and that contributions are not limited to participating delegates. With most members having Email or having access to it, communication is easy. Please let us use it.

I draw to your attention to the blend accreditation program proposal. This is a complex venture, not only in terms of the logistics for preparing sets of blends, but also in terms of agreeing what we should and can test. If you cast back to the 80s, some non-petrologists tended to downplay the value of petrology because the perception was that we could not obtain reproducible analyses. After a couple of almost false starts, Alan Davis was able to present a working accreditation system in 1995 with contributions coming from a large part of the active membership. This has now become an established part of ICCP and we routinely (well almost routinely) accredit vitrinite reflectance analyses and analyses of vitrinite content (mf). However, it is worth pointing out that just one year before that 1995 meeting, we were struggling with what were thought to be unsatisfactory results as we tried to accredit vitrinite reflectance and three or four petrographic variables. Once the system was simplified to a more realistic basis, suddenly what seemed a disaster in the making has turned to a success.

Blend analysis is a more complex task. For a start, blends vary greatly in their complexity and the aims of blend analysis can vary considerably too. They range from complex quality control, both for coking coal blends and steaming coal blends, to simply wanting to know if contaminants are present in a specific product. It is imperative that we get the basics of the system as correct as possible at the start. We now have considerable experience with the first accreditation program. That experience needs to be used to help set up the blend system. A little open discussion now, can save considerable amounts of agonising, and even dispute, at a later time. Contributions from those who have taken part in previous blend studies are especially welcome, but the program will need to serve all members for it to be fully effective.

It has been pointed out that the current website does not score highly in terms of search engine recognition. We are extremely lucky to have both the current hosting and the earlier hosting and what follows in no way detracts from earlier efforts. As a group we have probably never put in enough time, thought and effort to designing what we should have. A number of members have pointed out areas for improvement. In discussion with David Pearson, there seems to be general agreement that we don't want a site with flashing bells, pop-ups and a high level of complexity but that we need to prepare our ideas thoroughly. I certainly have a list of websites that I don't want it to look like. However, we do need to make the Home Page more informative and more interesting while keeping it simple. Just a mention of macerals and vitrinite might be a good idea! Also for a subject so dependent on images, we are not using photographs as well as we might. There is duplication on the front page. Accreditation is important, but SIX entries! Would it be better to have a single entry that would currently read Accreditation for vitrinite reflectance and maceral analyses? At least that would get two important terms on the Home Page. Again, please let us have suggestions (in this case to the Editor) and let us have them before the Utrecht meeting and not after the meeting when we may already have changed the site.

Early this year, the Independent newspaper in the UK reported the (high) cost of scientific journals, the (high) level of profits of scientific publishers and noted the Budapest Open Access Initiative. This initiative is designed to provide a "low cost or free alternative on the internet, backed by, of all people George Soros". Ever since I figured out (more or less) what the internet was about, it has seemed to me that organic petrology research data are well-suited to internet access. We rely heavily on visual data, but how often do you read a paper and either mutter to yourself, "wonder what it looked like", or "well that is black and white, but what was the colour image?" When the first Glossary was published, we were almost totally dependent on the good offices of CERCHAR. Duncan Murchison organized reprints from ICCP resources and forward purchases. Now technology permits us to undertake more of our own publishing. Many members believe that we can only obtain widespread distribution through the international journals. Although that is what we have done in the past for some material, journals would never have touched the Glossary. If Soros believes they could and should be bypassed, can we not give this issue further thought? We should be able to offer well-illustrated contributions at minimal or no cost. An example of the sort of material we could publish was available on the AAPG website as a PDF file, but now seems to have gone. The summary was of the book Overview of Iraq Petroleum Geology, by Jingyao Gong and Larry Gerken. The summary gave maps, sections and a table of reserves, all in colour. The table is fascinating, remaining reserves are listed at 42 billion barrels of oil equivalent from an original figure of 85 billion. I assume that AAPG put the summary PDF up as a "teaser", and I imagine they sold quite a few CDs as a result.

Looking forward to seeing you in Utrecht, and if not, then to receiving an Email from you beforehand.

I can be contacted at mailto:acc@ozemail.com.au

Alan Cook Wednesday, 23 June 2003

Know Your Coal Petrologist #5

No, NO. You should move *left* when I say ‘*pyrolitic carbon*’. Who is trying a novel technique to enlist new ICCP Members at the 2002 meeting in Maputo/Pretoria? Answer page 29.

ICCP - Thermal Indices Working Group : Summary of the 2002 Round Robin Exercise

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1. INTRODUCTION

History:

The Thermal Indices Working Group within ICCP (International Committee on Coal and Organic Petrology) conducted interlaboratory exercises over the last years with the aim of improving the reproducibility and comparability of spectral fluorescence microscopy. For this purpose a calibrated common lamp source (Baranger *et al.* 1991) was used by the laboratories to obtain a relative correction function. The first exercise consisted of the determination of spectral characteristics of *Tasmanites* algae in a series of increasing maturity samples from the Toarcian of the Paris Basin (Araujo *et al.* 1998).

From 1999 to 2001 the Thermal Indices Working Group determined spectral fluorescence properties and vitrinite reflectance on torbanite samples (1 - Alpha and 3 - Joadja) from Australia (Araujo *et al*, 2002). The results showed that the fluorescence spectra of the Alpha Torbanite exhibit two curves distinguishing two alginite populations with different fluorescence characteristics, one presenting a bluish-yellow fluorescence, and a second an orange-fluorescing algal population (Figs. 1a and 1b). Laboratories 1 and 3 characterized both populations and laboratory 2 supplied an average curve for this sample (Figure 1a and b, Table 1). The curve with the lower λmax is interpreted to represent the real maturation level of the sample. Spectral fluorescence parameters λmax, Q and Qmax, together with vitrinite reflectance (R_{random} (%)) are given in Table 1. The analyses of the Alpha Torbanite also included complementary spectral fluorescence measurements techniques such as VRF™ (Newman, 1997a; Newman, 1997b; Figure 2) and Fluorescence Alteration of Multiple Macerals - FAMM (Wilkins *et al.*, 1995 and Pickel *et al.*, 2001; Figure 3).

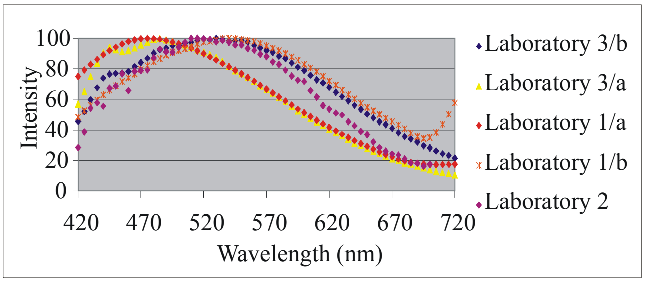


***Figure 1a** - Spectral curves for Alpha Torbanite*

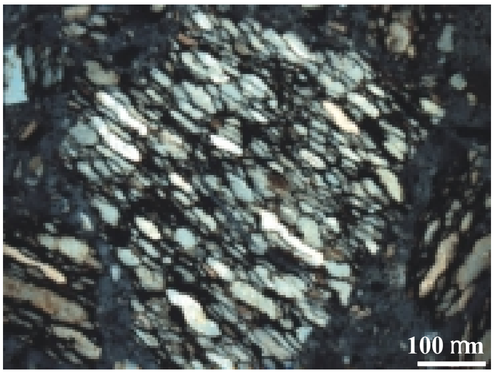


***Figure 1b** - Alpha sample under ultraviolet irradiation*

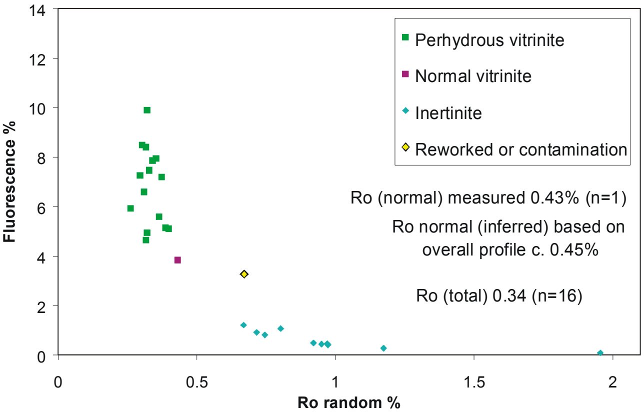


***Figure 2** - VRF™ plot for Alpha Torbanite illustrating relative positions of vitrinites and inertinite*

Table 1 - Fluorescence spectra parameters and vitrinite random reflectance obtained for Alpha Torbanite

Sample 1 (Alpha)							
Laboratory	1		2	3			5
Parameter	a	b		Axiophot II a	Axiophot II b	UMSP	
λmax (nm)	475	540	508	485	530	480	
Q	0.30	0.59	0.39	0.29	0.53	0.31	
Qmax	1.04	1.09	1.06	1.04	1.05	1.10	
n	10	10	10				
R_{random}(%)	0.29		0.29				0.31
S.D.	0.06		0.03				0.06
n	20		20				50

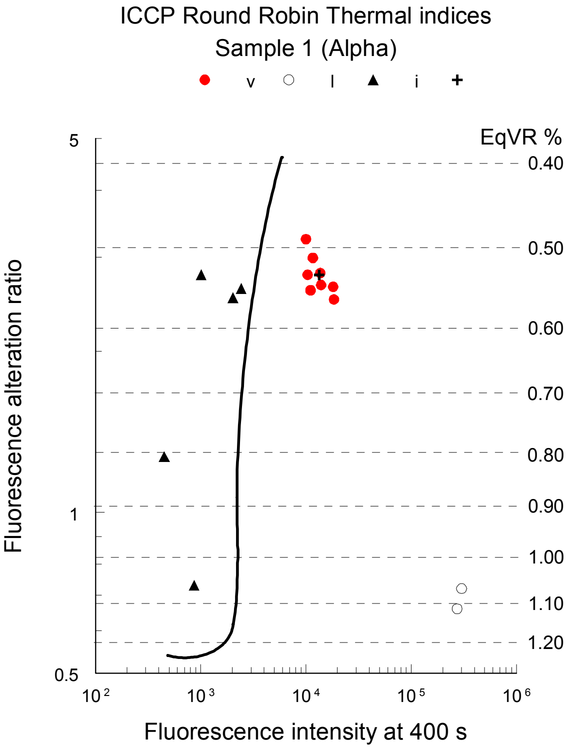


Figure 3 - FAMM diagram for Alpha Torbanite red circles: vitrinite; blank circles: liptinite; triangles: inertinite

Spectral curves and parameters provided by three different laboratories showed good correlations. Problems in the correlation of the results are related to the selection of the different populations present in the samples. Spectral fluorescence parameters and corresponding estimated vitrinite reflectance (VR) values for Alpha Torbanite indicate no suppression of vitrinite reflectance, while both VRF and FAMM data indicating that the vitrinite reflectance may be suppressed in the torbanite sample (Table 2).

Table 2 - Correlation between equivalent vitrinite reflectance based on spectral fluorescence parameters, VRF and FAMM and vitrinite random reflectance of Alpha Torbanite

Alpha Torbanite			
Lab	Parameter	VR and VR % equivalent	Rr % measured
1	(λmax) 475	~0.27	0.29
2	508	~0.32	0.29
3	485	~0.29	
4	(VRF™)	0.45	
5	(FAMM)	0.53	0.31

<u>2002 Exercise:</u>

The last exercise (2002 Round Robin Exercise) of this WG (Table 3) was the geochemical characterization of sample 1 (Alpha shale) and the comparison of random reflectances between the oil shale and the associated coal.

Table 3 - Participants of Thermal Indices WG 2002 exercise

Participants	Random Reflectance (Alpha Coal)	Organic Geochemistry
W. Kalkreuth Instituto de Geociencias Universidade Federal do Rio Grande do Sul	X	
C.V. Araujo/ V.C. Condé (GC/biomarkers - S.M. Barbanti /A.C. Macedo) Petrobras Research and Development Center	X	X
L. Stasiuk Canadian Geological Survey		X
W. Pickel (GC/biomarkers - H. Volk) CSIRO Petroleum	X	X

2. RESULTS AND DISCUSSION OF THE 2002 ROUND ROBIN EXERCISE

2.1 Geochemical characterization of Alpha Torbanite

2.1.1 Bulk Geochemistry

Bulk geochemical analysis comprised TOC determination and Rock-Eval pyrolysis. Alpha Torbanite is characterized by a high TOC content (62.5-70.4 wt.%). Free hydrocarbon content (S_1) and the source rock potential (S_2) is high. High

Hydrogen Indices (HI) and low Oxygen Indices (OI) are typical of type I kerogen. T_{max} values are relatively high (445 - 450ºC) and are known to vary only little with thermal maturity for type I organic matter (Espitalié, 1985; Table 4).

Table 4 *- TOC and Rock-Eval pyrolysis data of Alpha Torbanite* (*S3CO, **OICO)

Lab	TOC	Pyrolysis Rock Eval					
		S1	S2	S3	Tmax	HI	OI
1	62.6	5	555	11	450	886	18
3 (mean)	70.4	1.9	603.7	5.9*	445	858	18**

2.1.2 Gas Chromatography and Mass Spectrometry

- *n*-Alkane and isoprenoids

The comparison between results provided by laboratories 1 and 5 are very good in the range of *n*-C_{18} to *n*-C_{33}. Differences are mainly due to the loss of light hydrocarbons by laboratory 1 (Figure 4, Table 5).

Table 5 *- Ratios from the distribution of n-alkanes and isoprenoids*

Parameter	ratio*	
	Lab 1	Lab 5
Pr/Ph	0.86	2.6
Pr/*n*-C_{17}	1.63	5.76
Ph/*n*-C_{18}	0.88	1.01
$CPI_{22\text{-}32}$	2.31	2.69
$CPI_{24\text{-}32}$	2.32	2.69
$CPI_{26\text{-}32}$	2.38	2.74
$CPI_{26\text{-}30}$	2.37	2.80
CPI $2_{26\text{-}28}$	1.61	1.98
CPI $2_{28\text{-}30}$	3.46	4.12
CPI $2_{20\text{-}22}$	0.99	1.03
n-C_{31}/*n*-C_{19}	1.10	1.28

*calculations were based on peak areas (see appendix)

The distribution of *n*-alkanes and isoprenoids conveys the impression of an immature extract dominated by terrestrial organic matter indicating that, at this rank, the organic extract reflects preferentially the terrestrially derived organic matter. The most remarkable feature is the strong odd over even predominance in the range of *n*-C_{23} to *n*-C_{29}. According to Peters and Moldowan (1993) the odd predominance in the range of *n*-C_{23} to *n*-C_{31} is a characteristic of non-marine algal input. The Alpha shale is Permian, and for some reason Permian rocks containing land plant material often have also high *n*-C_{23} and *n*-C_{25} (George *et al.*, 1994; Casareo *et al.*, 1996), whereas e.g. Upper Carboniferous rocks containing abundant land plant material show their odd-predominance mainly in *n*-C_{27}, *n*-C_{29} and *n*-C_{31}.

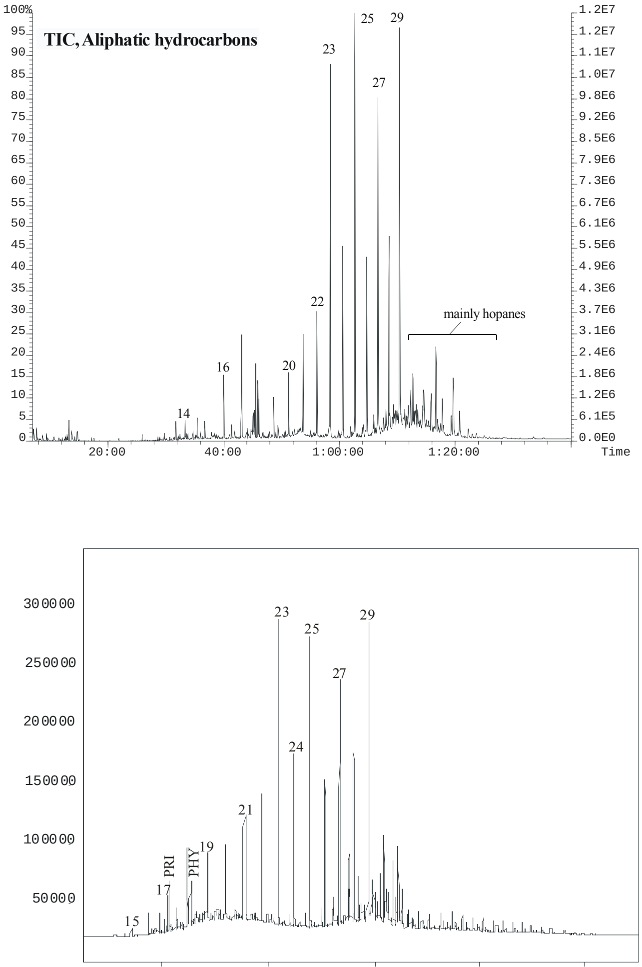
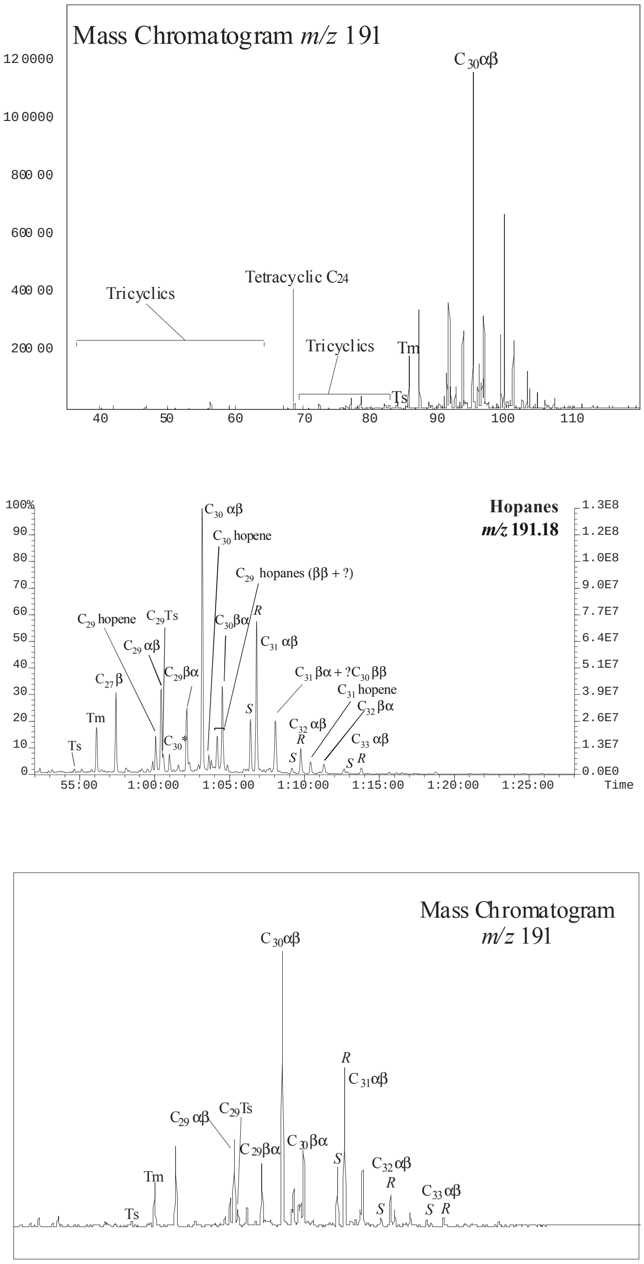


Figure 4a (above) and b (below) *- Aliphatic hydrocarbon distribution (**a**: for Lab.5,TIC - total ion chromatogram; **b**: for Lab.1 derived from GC).*

The high Pr/Ph ratio (2.6-Lab.5; Table 5), suggests deposition of terrestrial organic matter under oxic conditions (Didyk *et al.*, 1978) and high Pr/*n*-C_{17} ratios are characteristic of immature samples (Table 5).

- Terpane distribution

The correlation between results of the terpane distribution provided by laboratories 1 and 5 is very good (Table 6). The sample is characterized by the presence of tricyclic and tetracyclic terpanes in low relative abundances (Figure 5a) reflecting the input of terrestrially derived organic matter (Abdullah *et al*., 1988).



Figures 5a (top), b(middle), c(bottom) *- Terpane distribution as derived from m/z 191 mass chromatogram (**a:** Lab 1 showing tricyclic and tetracyclic terpanes, **b:** Lab 5, **c:** Lab 1)*

The maturity signal of hopanes conveys a very immature signature, typical for sediment extracts that have not yet entered the oil window. The presence of hopenes is noteworthy (Figure 5b). The very low Ts/Tm ratio (0.09/0.10; Table 6) indicates very low maturity. However, it is known that this ratio is also influenced by source, and tends to be low in coaly sediments. At a vitrinite reflectance equivalent (VRE) of ca. 0.7% the isomerization ratio of βα hopanes (moretane) to αβ hopane is about 0.05 (Peters and Moldowan, 1993). The Alpha Torbanite extract shows moretane/hopane ratios of 0.58 to 0.84 for C_{29} and C_{30} compounds, and is thus well below this maturity level (Table 6). The isomerization of the biologically more abundant *R* isomer into the thermally more stable *S* isomer for homohopanes reaches its thermal equilibrium stage at ca. 0.6% VRE, with *S*/(*S*+*R*) ratios of ca. 0.6. The Alpha Torbanite extract shows *S*/(*S*+*R*) ratios ranging from 0.19 to 0.27 for C_{31} to C_{33} homohopanes (Table 6) and is thus far from this equilibrium. The abundance of diahopanes is low in the sample, also indicating an immature rock extract.

Table 6 *- Maturity-related terpane parameters*

Parameter	Lab 1		Lab 5	
	ratio	**derived from**	**ratio**	**derived fom**
Ts/Tm	0.10	S191	0.09	M
Ts/(Ts+Tm)	0.09	S191	0.08	M
Tm/C_{27}β	0.54	S191	0.58	M
C_{29}*/C_{29} αβ hopane	_	S191	0.08	M
C_{30}*/C_{30} αβ hopane	_	S191	0.07	M
C_{29} αβ/(αβ+βα)	0.58	S191	0.58	M
C_{30} αβ/(αβ+βα)	0.78	S191	0.84	M
C_{31} αβ 22*S*/(22*S*+22*R*)	0.27	S191	0.26	M
C_{32} αβ 22*S*/(22*S*+22*R*)	0.20	S191	0.19	M
C_{33} αβ 22*S*/(22*S*+22*R*)	0.25	S191	0.23	M
C_{34} αβ 22*S*/(22*S*+22*R*)	0.34	S191	_	_
Homohopanes/C_{30} αβ hopane	0.98	S191	1.06	S191
C_{27} hopanes/C_{30} αβ hopane	0.18	S191	0.18	S191
C_{31} αβ hopanes/C_{30} αβ hopane	0.80	S191	0.81	S191

S191 (Selective Ion Monitoring *m/z* 191)

M (Metastable Reaction Monitoring GC-MS)

- Sterane distribution

There is a very good correlation between results on sterane distribution provided by laboratories 1 and 5. Differences in some results are related to different analytical methods (Lab.1 GC-MS, Lab.5 GC-MS, GC-MS-MS; Table 7).

The commonly occurring series of C_{27} to C_{29} ααα and αββ steranes and βα and αβ diasteranes were detected. There is a strong dominance by C_{29} steranes (Figure 6a, b and Table 7). This dominance is consistent with a strong terrestrial input to the organic matter of the Alpha torbanite.

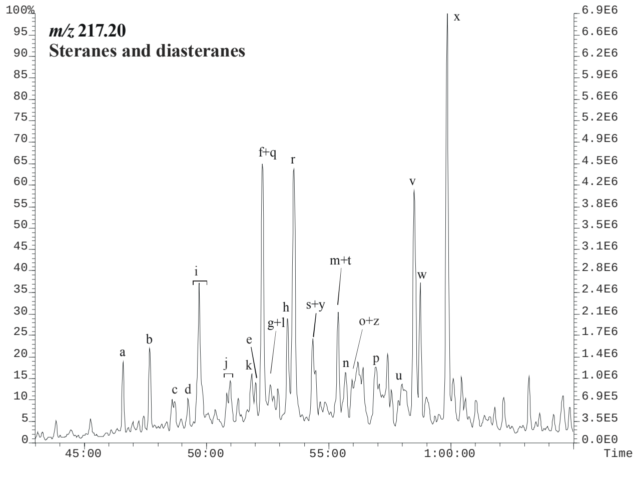
Biologically more abundant *R* isomers on C-20 position isomerise into the thermally more stable *S* configuration with thermal maturation, and αα isomers are isomerized to thermally more stable ββ isomers (Mackenzie *et al.*, 1982a; Mackenzie *et al.*, 1982b and Mackenzie, A.S. and Mckenzie, D., 1983). In the analysed sample both these parameters are well beyond their empirical endpoints, ie. ca. 0.54 for the ratio *S*/(*S*+*R*), equivalent to ca. 0.9% VRE, and 0.7 for the ratio C_{29}ββ/(ββ+αα), equivalent to ca. 1% VRE (Peters and Moldowan, 1993).

***Table** 7 - Maturity-related sterane parameters*

Parameter	Lab 1		Lab 5	
	ratio	derived from	ratio	derived fom
C_{27} αββ steranes 20*S*+*R* (% of total C_{27} to C_{29} αββ 20*R* steranes in 218 SIM)	20.4	S218	23.4	S218
C_{28} αββ steranes 20*S*+*R* (% of total C_{27} to C_{29} αββ 20*R* steranes in 218 SIM)	15.1	S218	14.9	S218
C_{29} αββ steranes 20*S*+*R* (% of total C_{27} to C_{29} αββ 20*R* steranes in 218 SIM)	64.6	S218	61.7	S218
C_{27} steranes (% of total C_{27} to C_{29} regular steranes)	14.0	S217	19.4	M
C_{28} steranes (% of total C_{27} to C_{29} regular steranes)	14.2	S217	16.5	M
C_{29} steranes (% of total C_{27} to C_{29} regular steranes)	71.8	S217	63.4	M
C_{27} βα diasteranes/(ααα+αββ steranes)	1.01	S217	0.87	M
C_{28} βα diasteranes/(ααα+αββ steranes)	_		0.78	M
C_{29} βα diasteranes/(ααα+αββ steranes)	_		0.84	M
C_{27}+C_{28}+C_{29} βα diasteranes/(ααα+αββ steranes)	_		0.84	M
C_{27} ααα 20*S*/(20*S*+20*R*)	0.26	S217	0.30	M
C_{28} ααα 20*S*/(20*S*+20*R*)	0.15	S217	0.21	M
C_{29} ααα 20*S*/(20*S*+20*R*)	0.12	S217	0.08	M
C_{29} ααα 20*S*/20*R*	0.13	S217	0.09	M
Vitrinite reflectance equivalent from C_{29} ααα 20*S*/20*R* (Sofer *et al.*, 1993)	0.42	S217	0.39	M
C_{27} αββ/(αββ+ααα)	0.21	S217	0.26	M
C_{28} αββ/(αββ+ααα)	0.56	S217	0.48	M
C_{29} αββ/(αββ+ααα)	0.47	S217	0.45	M
C_{27} βα diasterane 20*S*/(20*S*+20*R*)	0.57	S217	0.56	M
C_{28} βα diasterane 20*S*/(20*S*+20*R*)	_		0.54	M
C_{29} βα diasterane 20*S*/(20*S*+20*R*)	_		0.53	M

S218 (Selective Ion Monitoring *m/z* 218)

M (Metastable Reaction Monitoring GC-MS)



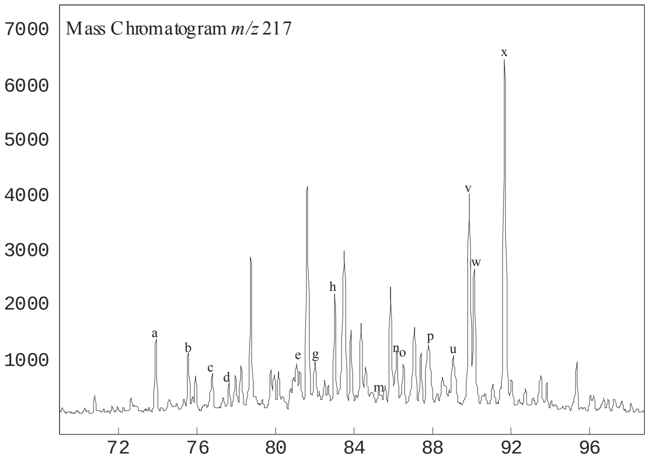


***Figure 6a (left),b (above)** - Sterane distribution as derived from m/z 217 mass chromatogram (**a:** Lab 5, **b:** Lab 1- for peaks identification see appendix)*

Laboratories 1 and 5 provided an estimation of VRE from the C_{29} *S/R* ratio based on a relationship published in Sofer *et al.* (1993) pointing out a maturity ranging from 0.39 to 0.42% VRE, indicating that the rock extract is immature and presenting a good correlation with the measured VRF data.

The ββ/(ββ+αα) ratios for the C_{27}, C_{28} and C_{29} steranes are consistent with a low thermal maturity for the studied sample.

2.2 Alpha Coal Random Reflectance

The determination of random vitrinite reflectance of the Alpha Torbanite and the associated coal was proposed to investigate the suppression effect on vitrinite reflectance in the oil shale. Results on R_{random} of the associated coal were provided by three laboratories (Table 8).

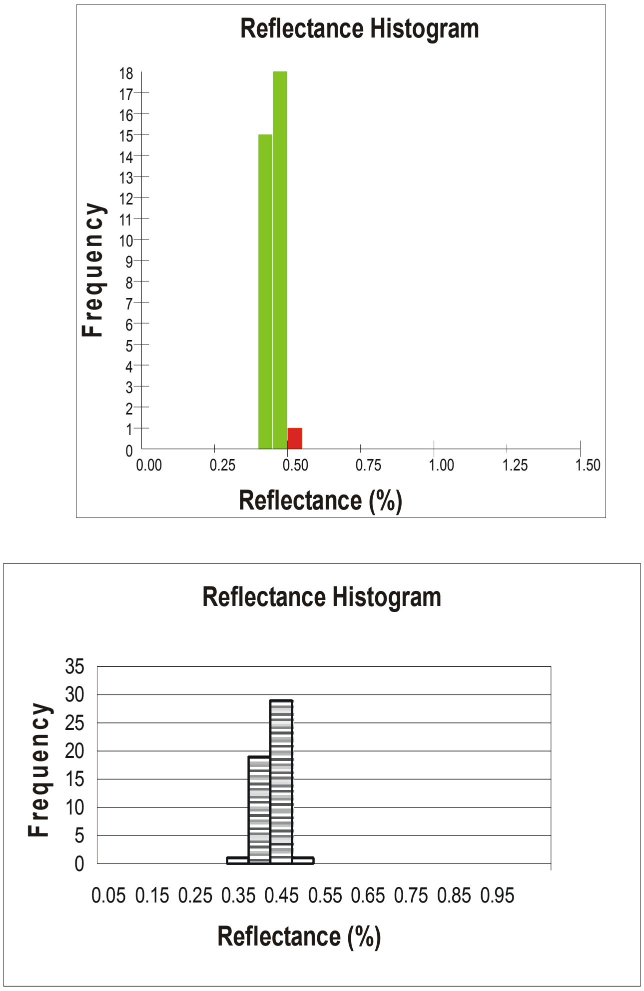


***Figure 7** - Reflectograms of the Alpha Coal*

The vitrinite reflectance of the coal (~0.41%) associated with the Alpha Torbanite is about 0.1% higher than the one determined for the oil shale (~0.30%) indicating a significant suppression of vitrinite reflectance in the torbanite (Figure 7, Table 8). FAMM equivalent VR data of the Alpha Coal suggests that the vitrinite reflectance of the coal is also suppressed (Table 8).

***Table 8** - Vitrinte random reflectance and Equivalent VR (FAMM) of Alpha Coal*

Laboratory	**Alpha Coal**			
	R_{random} %	Standard Deviation	Total N.	EqVR (FAMM)
1	0.45	0.03	34	
2	0.36	0.035	50	
3				
4				
5	0.41	0.03	50	0.68

Table 9 summarizes the maturity parameters obtained for the alpha torbanite and the associated coal. The equivalent vitrinite reflectance (VR) based on fluorescence parameters is in the same order as the measured R_{random} (%) and does not indicate suppression.

***Table 9** - Summary of maturity parameters of Alpha Torbanite and associated coal*

Maturity Parameters	**Alpha Torbanite**	**Alpha Coal**	**Remarks**
Rrandom%	0.29-0.31	0.36-0.45	
VRE based on fluor.parameters	0.27-0.32		
VRF %	0.45		
VRE (FAMM)	0.53	0.68	
Rock-Eval T_{max}	445˚C 450˚C		Not accurate for maturity evaluation of Type I Kerogen
Homopanes C_{31}-C_{33} *S*/(*S*+*R*)	0.19-0.27		VRE<<<0.6%Ro
ββ hopanes	detected		VRE< 0.4%
VRE (C_{29} ααα*S/R*)	0.39- 0.42		

On the other hand, vitrinite reflectance suppression is clearly indicated by VRF and FAMM equivalent VR. Rock-Eval T_{max} in the range of 445-450ºC is not accurate for maturity evaluation in this particular sample due to facies effects. Maturity parameters derived from hopanes and steranes point out that the sample is immature and VRE (C_{29} ααα *S/R*) based on Sofer's relationship present a good correlation with VRF.

3. CONCLUSIONS

The results show:

- Measured vitrinite reflectance in the Alpha Torbanite sample ranges from 0.29-0.31 %.
- Measured vitrinite reflectance of the associated coal is about 0.1% higher than the vitrinite reflectance measured in the Alpha Torbanite.
- Spectral fluorescence parameters do not indicate a suppression, whereas both results from the VRF and FAMM methods indicate a suppression of about 0.15-0.2% for the vitrinite reflectance of the oil shale. It is likely that spectral fluorescence parameters are not able to "detect" suppression in low maturity samples.
- Generally good agreement of results on bulk geochemistry (TOC, Rock Eval), and GC / GC-MS provided by three laboratories for Alpha Torbanite.
- Rock-Eval T_{max} in the range of 445-450ºC is not accurate for maturity evaluation of Type I kerogen.
- Maturity parameters derived from hopanes and steranes point out that the sample is immature and VRE (C_{29} ααα *S*/*R*) based on Sofer's relationship present a good correlation with VRF.
- Random vitrinite reflectance obtained for Alpha Coal is about 0.1% higher than random vitrinite reflectance of Alpha Torbanite indicating a suppression of the oil shale VR in that order. However, according to FAMM results, the vitrinite reflectance in the coal is also suppressed.

The consistency between most of data provided by the laboratories involved in this round robin exercise is very good. Additional work is needed to investigate the deviations of maturity parameters in marine type II (marine facies) and type III (coaly) kerogens.

Acknowledgements

The authors wish to thank Adrian Hutton for providing samples for this exercise, and Ángeles Gómez Borrego for her critical comments and help in improving this report.

REFERENCES

Abdullah, W.H., Gjelberg, J., Jones, J.M., Murchinson, D.G. and Telnaes, N. (1988) Early carboniferous coal deposition environment in Spitzbergen. *Advances in Organic Geochemistry*, **2**, 953-964.

Araujo, C., Vieth-Redemann, A., Pradier, B., Kalkreuth, W., Gomez Borrego, Á., Gurba, L., Hagemann, H., Hufnagel, W., Koch, M., Kuili, J., Laggoun-Defarge, F., Lo, H., Newmann, J., Spanic, D., Suárez-Ruiz, I. and Thompson-Rizer, C. (1998) ICCP Interlaboratory Exercise on the Application of Microspectral Fluorescence Measurements as Maturity Parameters. *Revista Latino Americana de Geoquimica Organica*, **4**, 41-50.

Araujo, C.V., Kalkreuth, W., Stasiuk, L. Pickel, W., Newman, J. and Condé, V.C. (2002) Interlaboratory Studies on Thermal Indices of Torbanite Samples from Australia. *8th. Latin American Congress on Organic Geochemistry*, Cartagena, Colombia. CD-ROM, pp. 31-34.

Baranger, R., Martinez, L., Pittion, J-L and Pouleau, J. (1991) A new calibration procedure for fluorescence measurements of sedimentary organic matter. *Org. Geochem*., **17**, 467-475.

Casareo, F. E., George, S. C., Batts, B. D. and Conaghan, P. J. (1996) The effects of varying tissue preservation on the aliphatic hydrocarbons within a high-volatile bituminous coal. *Org. Geochem*., **24**, 785-800.

Didyk, B.M., Simoneit, B.R.T., Brassell, S.C., Eglinton, G. (1978) Organic geochemical indicators of palaeoenvironmental conditions of organic sedimentation. *Nature*, **272**.

Espitalié, J. (1985) Use of T_{max} as a maturation index for different types of organic matter. *In:* Thermal modelling in sedimentary basins, (J. Burrus, ed.), pp. 475-496. Edit. Technip., Paris.

George, S. C., Smith, J. W. and Jardine, D. R. (1994) Vitrinite reflectance suppression in coal due to a marine transgression: case study of the organic geochemistry of the Greta Seam, Sydney Basin. *Australian Petroleum Exploration Association Journal*, **34(1)**, 241-255.

Mackenzie, A.S., Brassel, S.C., Eglinton, G., and Maxwell, J.R. (1982a) Chemical fossils: the geological fate of steroids. *Science*, **217**, p.491-504.

Mackenzie, A.S., Lamb,N.A. and Maxwell, J.R. (1982b) Steroid hydrocarbons and thermal history of sediments. *Nature*, **295**, p. 223-226.

Mackenzie, A.S. and Mckenzie, D. (1983) Isomerization and aromatization of hydrocarbons in sedimentary basins formed by extension. *Geology Magazine*, **120**, p.417-470.

Newman, J (1997a) VRF^{TM}; Combined vitrinite reflectance and fluorescence. *Coal Research Conference*, Wellington, New Zealand.

Newman, J (1997b) New approaches to detection and correction of suppressed vitrinite reflectance. *APPEA Journal*, 524-535.

Peters, K.E. and Moldowan, J.M. (1993) *The biomarker guide. Interpreting molecular fossils in petroleum and ancient sediments,* Prentice Hall, Englewood Cliffs, N. J., 363 pp.

Pickel, W., Wilkins R.W.T., Buckingham, C.P., Faiz, M., Kurusingal, J., Russell, N. and Sherwood, N. (2001) Laser Microscopy - FAMM. *In*: L. Gurba (2001, ed.) Review of New Methodologies and Techniques in Organic Petrology. *ICCP White Paper Series*, 2-10.

Sofer, Z., Regan, D. R., Muller, D.S. (1993) Sterane isomerization ratios of oils as maturity indicators and their use as an exploration tool, Neuquen basin, Argentina. *XII Congreso Geológico Argentino y II Congreso de Exploración de Hidrocarburos Actas I,* 407-411.

Wilkins, R.W.T., Wilmshurst, J.R., Hladky, G., Ellacott, M.V. and Buckingham, C.P. (1995) Should fluorescence alteration replace vitrinite reflectance as a major tool for the thermal maturity determination in oil exploration? *Org. Geochem*, **22**, 191-209

Appendix

Peak identification list

Peak assignments for steranes, diasteranes and methylsteranes in the *m/z* 217, 218, 259 and 231 mass chromatograms and MRM chromatograms.

Peak	Sterane, diasterane and methylsterane assignments	Abbreviation
a	13ß(H),17α(H)-diacholestane(20*S*)	C27 ßα 20*S* diasterane
b	13ß(H),17α(H)-diacholestane (20*R*)	C27 ßα 20*R* diasterane
c	13α(H),17ß(H)-diacholestane (20*S*)	C27 αß 20*S* diasterane
d	13α(H),17ß(H)-diacholestane (20*R*)	C27 αß 20*R* diasterane
e	5α(H),14α(H),17α(H)-cholestane (20*S*)	C27 ααα 20*S* sterane
f	5α(H),14ß(H),17ß(H)-cholestane (20*R*)	C27 αßß 20*R* sterane
g	5α(H),14ß(H),17ß(H)-cholestane (20*S*)	C27 αßß 20*S* sterane
h	5α(H),14α(H),17α(H)-cholestane (20*R*)	C27 ααα 20*R* sterane
i	24-methyl-13ß(H),17α(H)-diacholestane (20*S*)*	C28 ßα 20*S* diasterane
j	24-methyl-13ß(H),17α(H)-diacholestane (20*R*)*	C28 ßα 20*R* diasterane
k	24-methyl-13α(H),17ß(H)-diacholestane (20*S*)	C28 αß 20*S* diasterane
l	24-methyl-13α(H),17ß(H)-diacholestane (20*R*)*	C28 αß 20*R* diasterane
m	24-methyl-5α(H),14α(H),17α(H)-cholestane (20*S*)*	C28 ααα 20*S* sterane
n	24-methyl-5α(H),14ß(H),17ß(H)-cholestane (20*R*)	C28 αßß 20*R* sterane
o	24-methyl-5α(H),14ß(H),17ß(H)-cholestane (20*S*)	C28 αßß 20*S* sterane
p	24-methyl-5α(H),14α(H),17α(H)-cholestane (20*R*)	C28 ααα 20*R* sterane
q	24-ethyl-13ß(H),17α(H)-diacholestane (20*S*)	C29 ßα 20*S* diasterane
r	24-ethyl-13ß(H),17α(H)-diacholestane (20*R*)	C29 ßα 20*R* diasterane
s	24-ethyl-13α(H),17ß(H)-diacholestane (20*S*)	C29 αß 20*S* diasterane
t	24-ethyl-13α(H),17ß(H)-diacholestane (20*R*)	C29 αß 20*R* diasterane
u	24-ethyl-5α(H),14α(H),17α(H)-cholestane (20*S*)	C29 ααα 20*S* sterane
v	24-ethyl-5α(H),14ß(H),17ß(H)-cholestane (20*R*)	C29 αßß 20*R* sterane
w	24-ethyl-5α(H),14ß(H),17ß(H)-cholestane (20*S*)	C29 αßß 20*S* sterane
x	24-ethyl-5α(H),14α(H),17α(H)-cholestane (20*R*)	C29 ααα 20*R* sterane
y	24-*n*-propyl-13ß(H),17α(H)-diacholestane (20*S*)	C30 ßα 20*S* diasterane
z	24-*n*-propyl-13ß(H),17α(H)-diacholestane (20*R*)	C30 ßα 20*R* diasterane
A	24-*n*-propyl-5α(H),14α(H),17α(H)-cholestane (20*S*)	C30 ααα 20*S* sterane
B	24-*n*-propyl-5α(H),14ß(H),17ß(H)-cholestane (20*R*)	C30 αßß 20*R* sterane
C	24-*n*-propyl-5α(H),14ß(H),17ß(H)-cholestane (20*S*)	C30 αßß 20*S* sterane
D	24-*n*-propyl-5α(H),14α(H),17α(H)-cholestane (20*R*)	C30 ααα 20*R* sterane

* = isomeric peaks (24*S* and 24*R*)

Carbon Preference Index (CPI) ratios

CPI values formed according to the following pattern:

$CPI_{22\text{-}32} = (2*(n\text{-}C_{23}+ n\text{-}C_{25} + n\text{-}C_{27}+ n\text{-}C_{29}+ n\text{-}C_{31}))/(n\text{-}C_{22}+ 2*(n\text{-}C_{24} + n\text{-}C_{26}+ n\text{-}C_{28}+ n\text{-}C_{30})+n\text{-}C_{32})$

$CPI2_{\ 26\text{-}28} = (2* n\text{-}C_{27})/(n\text{-}C_{26}+ n\text{-}C_{28})$

Qualifying System for Reflectance Analysis W.G. 2002 Round Robin Results

Á.G. Borrego, C.V. Araujo, B. Cardott, V. Condé, P. David, D. Flores, W. Hiltmann, W. Kalkreuth, K. Kommeren, B. Ligouis, M. Marques, J.G. Mendonça Jr., M. Misz, W. Pickel, K. Reimer, I. Suárez-Ruiz, A. Vieth.

Introduction

Measurement of vitrinite reflectance in sedimentary rocks other than coal is often a difficult task due to a number of factors, amongst them: i) Vitrinite is very scarce in certain sedimentary basins resulting in low statistical significance of the data; ii) Particles are sometimes too small for a reliable measurement; iii) Surrounding minerals may affect the accuracy of the reflectance determination; iv) Polishing may be poor and this can be linked to sample lithology and v) Particles with suppressed reflectance or reworked particles may co-exist with the rank vitrinite population. With this scenario, a numeric label accompanying the reflectance measurement and informing about the reliability of the mean reflectance value would no doubt be extremely useful not only for computer based basin analysis (figures are easier to handle for computers) but also for any person having to deal with data of different quality.

The results of this working group are expected to be the basis for a future accreditation program on vitrinite reflectance measurements of dispersed organic matter (DOM) in sedimentary rocks.

The **qualifying system for reflectance analysis W.G.** was created at the Bucharest meeting in 1999, and is aimed at discussing and testing a qualifying system for vitrinite reflectance analysis, initially proposed by Joachim Koch. Since 2001 Angeles G. Borrego convened the activities of the group that performed a Round Robin exercise during the year 2002 based on CD images of vitrinite particles. In this way all participants were seeing a similar image to be classified. This is a summary of the activities during the year, the results of the Round Robin exercise and the subsequent discussion during the ICCP Meeting in Africa.

Exercise Content

Very briefly, the system proposed by Joachim Koch consists of labelling the vitrinite measurements with a number from 1 to 5 depending on the size, polishing quality, accompanying minerals and amount of particles. The CD exercise contained 193 vitrinite images that participants were asked to classify according to Koch's system. The images included vitrinites of different maturity and rock type, but in order to prevent any biasing when making a decision, this information was not provided in advance. Participants were also asked to apply their own classification system if any.

The classification system in which the exercise was based consists on 5 qualifiers defined as follows:

1 = very good: Bands, stripes, large detrinite particles (>3x the measuring field), free of pores, scratches or bright minerals (minimum distance for defects =1 measuring field diameter. Pyrite needs more)

2 = good: Bands, stripes, large detrinite particles (<3x the measuring field, but distinctly thicker), free of pores, scratches or bright minerals (minimum distance for defects or border to measuring field =½ diameter)

3 = common: Clean surfaces about the measuring field size or thicker particles with impurities at the edge of the measuring field.

4 = bad: irregular surface within the measuring field (spots, granulated surface, micro-scratches), or pyrite in a distance of one measuring field.

5 = very bad: Particles about the size of the measuring field. Suspected weathered, altered or oxidised particles. Particles with suspected suppressed reflectance.

Results

The results shown in this report are based on the data provided by the authors (17). For further information a compilation with images, figures and examples is available in the ICCP web site. Most of the statistical considerations are based on modal values and the level of agreement of participants with these modal values was overall low. Regarding individual scores only two participants classified the surface according to mode in more than 70% of the particles and 12 more did in more than 50% of the particles. On the other hand, the certainty of our assignments was also not very high since only 31 % of the particle surfaces were agreed by 12 or more out of 17 participants. Still there are a lot of information to extract from our data.

Agreement in relation to quality of the surface

It might be argued that the disagreement is related to the low quality of the particles/images. It is clear that the screen quality will affect the image we observe but the differences will be smaller than those occurring when different samples, polished in different laboratories, are analysed for vitrinite reflectance using different microscopes. Figure 1 shows the distribution of particles according to participants decision. Most of the particles were classified as common (Q=3) or bad (Q=4), the distribution of particles being slightly skewed to bad quality particles. “Unfortunately quite common situation in real life”.

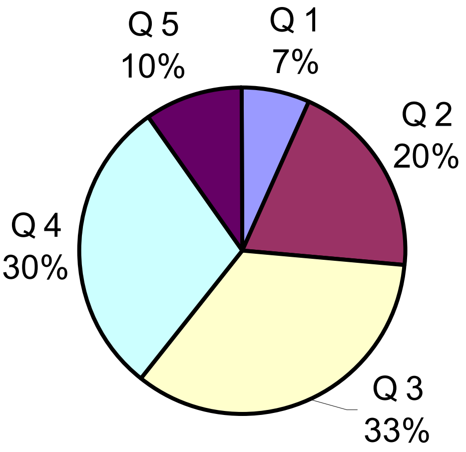


Figure 1. *Amount of particles assigned to each qualifier*

Paying attention to the amount of particles being classified with a qualifier higher or lower than the mode, we can conclude that the amount of pessimistic profiles (*higher amount of lower quality particles*) and optimistic profiles (*higher amount of higher quality particles*) was rather balanced and so were the individual scores within each group.

The level of agreement can be related to the quality of the surface (higher agreement within the high quality surfaces than within the low quality surfaces or vice versa; Figure 2). The certainty in the classification of particles was roughly equally low for the high, medium or low quality particles. The reasons for the low agreement appear to be rather complex.

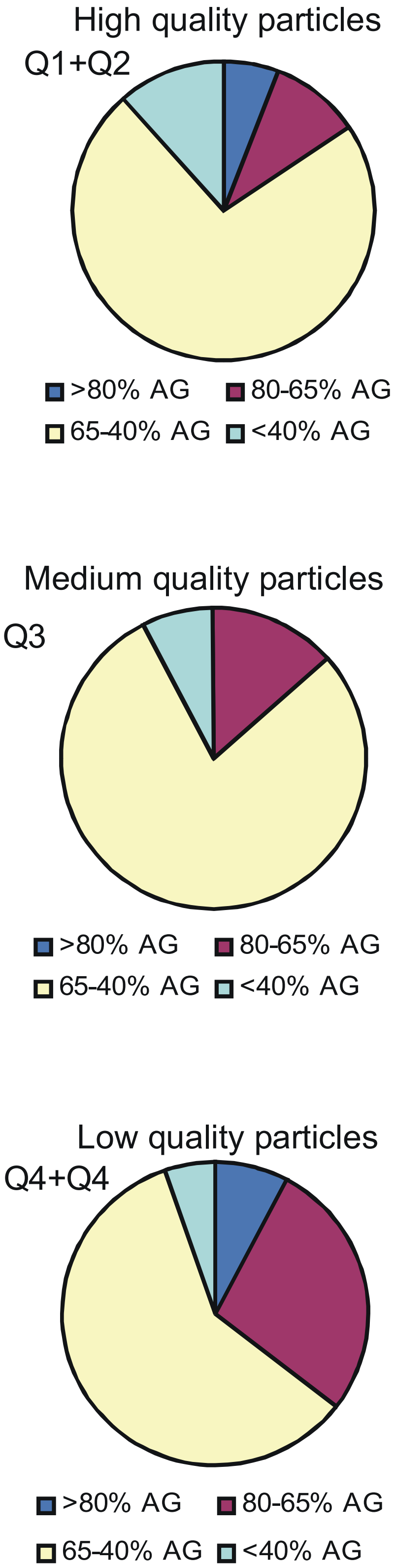


Figure 2. *Level of agreement (AG) of participants in relation to the quality of the surface*

Distribution of particles and Kerogen Type

Particles were selected trying to find a balance between vitrinites from different kerogen types. The 193 particles were distributed in the following way: 35% of the particles belonged to samples from type III kerogen, 24% to type I and 41% to type II. As shown in Figure 3 vitrinites from the three kerogen types were represented by high, medium and low quality particles but type III kerogen samples yielded more high quality particles.

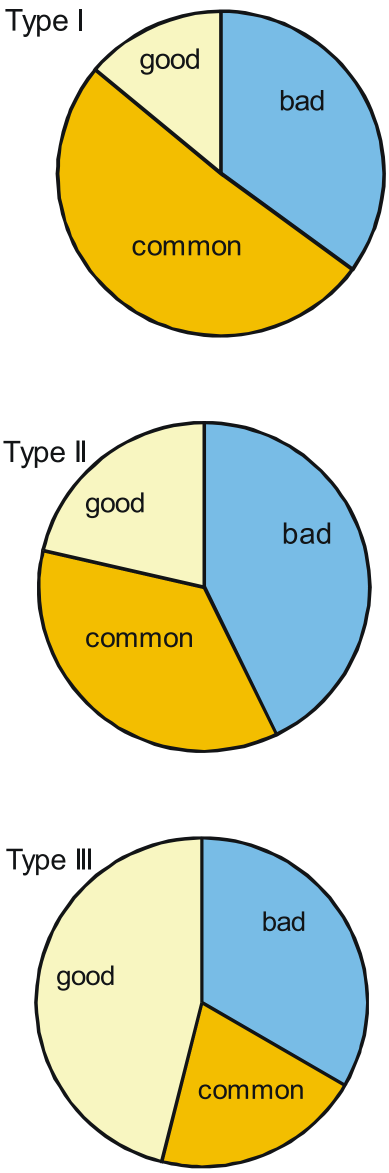


***Figure 3.** Amount of particles classified as good (Q1+Q2), common (Q3) and bad (Q4+Q5) within each kerogen type*

The possibility that some of the samples from which images were taken yielded only high or low quality particles was also checked. Most of the vitrinites within each sample were classified as common or bad (Q 3) although some type III samples contained quite a number of good surfaces (Q<3) and some type II samples did not yield any good vitrinite.

Reasons for low level of agreement

Some participants doubted with the assignments when performing the exercise. It was intended to consider the doubts without increasing enormously the amount of data and statistical treatment. When participants doubted between two options, data were evaluated using both but not all possible combinations checked. Frequencies of modes were generally higher considering the first option; 2nd option only changed the modal values in 9% of the particles. These particles had all low frequency of mode, thus they were classified with low certainty, and therefore further statistical treatment was only carried out with the first option. It must be also taken into account that some participants did not classify the surface if they thought it was not vitrinite or it had suppressed reflectance and therefore the dataset is not totally homogeneous.

The points raised by participants and in the discussion during the Meeting for low level of agreement can be summarised as follows:

1. Concerns about polishing

The exercise was conceived as comprising the most general situations that an analyst performing vitrinite reflectance analysis in sedimentary rocks has to face. This includes the fact that not all the vitrinite particles in the sample achieve the same degree of polishing due to several reasons such as the effect of accompanying components, internal structure, etc. The question of polishing was first raised by M. Reinhardt, suggesting to focus the activities of the WG on polishing, as it was a concern of some other participants, and this problem was throughout discussed during the Meeting in Africa.

It is no doubt that polishing in source rocks is of the foremost importance. Nevertheless the various qualifiers (Q1-Q5) should allow the classification of the surfaces without any problem. For example, Figure 4 shows two images of poorly polished vitrinites classified as common (Q3) and bad (Q4) although the system has qualifiers for lower quality. Polishing does not appear as the main reason for low agreement since the classification system allows 5 different degrees for quality of polishing.

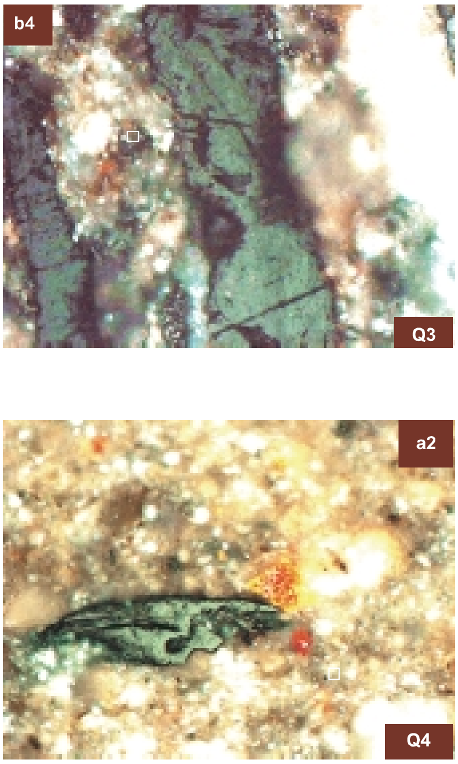


Figure 4. *Example of two poorly polished vitrinites classified asQ3 and Q4 by participants*

2. <u>Concerns about weathering, suppression and reworking</u>

The classification system we are using to label vitrinite surfaces keeps criteria of size, position and presence of irregularities in Q1-Q4 and introduces genetic implications in Q5. This was addressed by some participants and was discussed during the meeting in Africa. This appears as one of the reasons for large discrepancies since according to the system, particles suspected altered should be classified as Q5 regardless of the quality of the surface (Figure 5). Some of the rims attributed to oxidation were due to camera artefacts and will be difficult to avoid unless we move to microscopy samples. The question of suppression, reworking, etc. will be also better addressed on microscopy samples since, in most cases, the mean vitrinite reflectance of the sample is taken as reference value.

A category is needed to put particles discarded by these reasons but they should not be mixed with the surface criteria we are trying to agree on.

3. <u>Concerns about vitrinite identification</u>

The particles were selected by a single person (the convenor) and following her personal criteria and therefore identifications might be wrong. Unfortunately, this is difficult to determine just having a look at the selected image. A round particle might be a resinite but also corpovitrinite and we can only solve this when analysing microscopy samples, a further step in the WG activities. In any case, we should be able to classify the quality of the surface for reflectance measurement even if we do not agree with the identification.

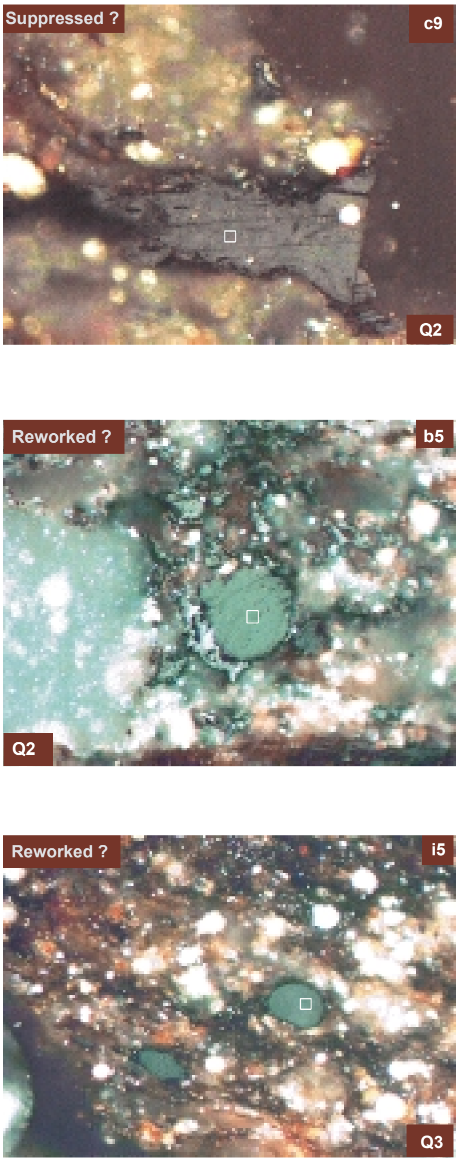


Figure 5. *Examples of particles identified as reworked or suppressed and having variable surface quality*

Summary

Despite the difficulties and the relatively low frequencies of mode, we have **very encouraging**

results.

- most participants classified the particles either as the mode or as a consecutive qualifier, except in the cases where concepts like oxidation or suppression were involved.
- No participant was alone in a given decision

Suggestions for an improved system

The following actions to improve the classification system have been suggested: i) Combine Q1 and Q2, ii) Do not measure particles classified as Q4 and Q5, iii) use some transition values, iv) move to a simplified system.

K. Kommeren proposed a system in which only three qualifiers are considered: **1:** Good-inside and outside the measuring field, free of pores, scratches, minerals, impurities or irregularities; **2:** Common/moderate- little impurities, not close to pyrite or edges of fragment. No clear oxidation or suppression and **3:** Bad-weathering, oxidation, suppression, abundant impurities and close to edge. Mineral/pyritic inclusions.

Discussion at the Meeting focused on the convenience of moving to a simplified system with a lower number of qualifiers. This will no doubt reduce the spread of results but will increase the weight of each individual qualifier. In addition decrease of classes alone will apparently not solve our discrepancies, since major difficulties were found in distinguishing Q3 and Q4 that should be anyway in different class.

Forthcoming work

For the year 2003 a new Round Robin exercise based on CD images will be carried out. The WG will stay one year more with a 5 classes system improving significantly the descriptions and removing any mention to genetic aspects (they should go into a different class). Having these results in hand we can consider again to simplify the system.

- Particularly, limits between Q3 and Q4 are too vague (suggestions are welcomed).
- The qualifiers will change the names avoiding labels as common (confusing since it has a frequency meaning), and bad. Instead Q1=Best, Q2=good, Q3=intermediate, Q4=low, Q5=lowest quality surfaces will be used.

Acknowledgements

Co-operation of L. Stasiuk is gratefully acknowleged for providing samples from Gething coaly and Lower Mannville Formations to expand the sample set. M. Rheinhart contribution and suggestions are also acknowledged. Special thanks to all attendants to the presentation of working group activities in Kruger Park session for their very helpful suggestions to improve our classification system.

Eds note : more images and information are available on the ICCP website http://www.iccop.org and follow the Commission II link.

Know Your Coal Petrologist #6

Are you able to recognize the two good specialists in Organic Petrology greatly concerned with discussing "Port wine Dispersed Organic Matter" in a Port wine cellar, at Vila Nova de Gaia, in 1982? Answer page 30.

Notice : International Journal of Coal Geology

As of April 1, 2003, manuscripts for the journal should be submitted directly to:

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55th Meeting of the International Committee for Coal and Organic Petrology - ICCP
10-16 August 2003, Utrecht, The Netherlands

Preliminary Agenda

Sunday 10 August

13.00-17.30 Meeting of the ICCP Council
18.00-20.00 Registration and ice-breaker

Monday 11 August

8.00 - 9.00 Registration

9.00-11.45 Opening Ceremony/Opening Plenary Session of the General Assembly

9.00 - 9.10 Welcome by the Chair of the Organising Committee, Henk Pagnier
9.10 - 9.20 Welcome by the Director of the Netherlands Institute of Applied Geoscience -TNO, National Geological Survey, Hessel Speelman
9.20 - 9.30 Welcome by the Rector of the University of Utrecht
9.30 - 9.50 Presentation by Michiel Dusar, Geological Survey of Belgium, Bruxelles: History of the International Congress of Carboniferous and Permian Stratigraphy
9.50 - 10.10 Presentation by Berend Scheffers, TNO-NITG, Utrecht: Oil and Gas in The Netherlands
10.10 - 10.15 Welcome and general information by Petra David, Secretary Organising Committee

10.15 - 11.00 Opening Plenary Session of the General Assembly- general business

1. Apologies and other attendance matters
2. Minutes of the Maputo/Pretoria meeting
3. Results of Elections
4. Future meetings
    4.1 Budapest, Hungary (2004)
    4.2 Patras, Greece (2005)
    4.3 Bandung, Indonesia (2006)
5. Membership
    5.1 Associate Membership
    5.2 Full Membership
    5.3 Honorary Membership
6. Status of ICCP
7. Elections
8. Website

11.00 - 11.30 ***Coffee Break***
11.30 - 13.00 Opening Plenary Session - general business (continued)

13.00 - 14.00 ***Lunch***

14:00 -17.15 Meeting of Commission II

14.00 - 14:30 Summary of Working Group Activities during the past four years : Wolfgang Kalkreuth
14.30 - 15.00 Environmental Applications of Organic Petrology Working Group - Convenor: M. Mastalerz. The working version of the atlas of anthropogenic particles will be presented, and the discussion will focus on the form of the atlas, as well as type of additional images that need to be acquired.
15.00 - 15.30 Thermal Indices Working Group - Convenor: C. Araujo. A summary of the results of previous exercises, currently available in the ICCP Web, will be presented and the guidelines for the new exercises will be discussed.

15.30 - 15.45 ***Coffee Break***

15.45 - 16.45 Classification of DOM - Convenors: L. Stasiuk, J. Burgess, A. Hutton. Following the presentation of a draft layout for the Atlas on Dispersed Organic Matter during last year meeting, the format and content were discussed. Progress on the Atlas and Classification system will be presented this year.
16.45 - 17.15 The Atlas on Dispersed Organic Matter Project - Convenor: W. Kalkreuth. A number of documents dealing with preparation of samples, analysis of components, reflectance analysis, occurrence of components, etc., were prepared as introduction of the initial Atlas Project. The future of these documents will be discussed.

17.15 Departure to the Reception

18.00 - 19.00 Reception by the Mayor of Utrecht

Tuesday 12 August

9.15-10.45 Meeting of Commission II

9.15 - 9.45 Coalbed Methane Working Group - Convenors: P. Crosdale, L. Gurba. The WG needs to accommodate to the current developments on coalbed methane and CO_2 sequestration. How to accomplish this objective and the best way to relate it with coal petrology will be discussed

9.45 - 10.45 Qualifying system for reflectance analysis - Convenor: Ángeles G. Borrego. A Round Robin exercise is running in which participants were asked to classify more than two hundred vitrinite particles according to a qualifying system modified from that used last year. During the meeting results will be presented and discussed.

10.45 - 11.15 ***Coffee Break***

11.15-18.20 Meeting of Commission III

11.15 - 11.45 Summary of Working Group Activities during the past four years : Rosa Menéndez

11.45 - 12.25 Estimation of structural order - Convenor: Slawka Pusz. The results from the Round Robin exercise with four samples obtained at different temperatures will be discussed in terms of comparison of optical parameters with structural studies made by XRD and TEM.

12.25 - 12.45 Automation - Convenor: David Pearson. A reactivation of the WG is expected at this meeting.

12.45 -13.45 ***Lunch***

13.45 - 15.00 Coal blends - Convenor: Isabel Suárez Ruiz. A report will be presented on the results of 2003 Round Robin exercise, and a final report on the activities performed by the working group. A preliminary presentation will be made of the planning for future activities concerned with a coal blends accreditation program.

15.00 - 15.30 Coke petrography - Convenor: to be determined. A reactivation of the WG dealing with coke petrography is expected in this meeting, as well as the election of a new convenor.

15.30 - 16.15 Improved Image Analysis - Convenor: Christina Rodrigues. The new working group dealing with improved image analysis for general purposes, convened by Cristina Rodrigues, will decide on the specific technical aspects discussed at Pretoria.

16.15 - 16.45 ***Coffee Break***

16.45 - 17.05 Combustion - Convenor: Ed Lester. The Combustion working group will deal with the presentation of the CD atlas that will be produced. Edward Lester will basically demonstrate the program and make copies available for those interested.

Wednesday 13 August

Mackowsky Symposium (in the scope of the 55th ICCP meeting - Utrecht 2003)

9.00 - 9.15 M. Lemos de Sousa - Introduction.

9.15 - 9.30 E. Wolf-Fisher and C. Diessel - In memoriam Prof. Dr. rer. nat. habil. Marie-Therese Mackowsky.

9.30 - 9.45 C. Diessel - My Doctor Mother Marie-Therese.

9.45 - 10.15 M. Steller - Development of the applied coal petrology at the Bergbau-Forschung/DMT during the last 50 years.

10.15 - 10.45 J. Hower, K. Kuehn and B. Parekh - Petrographic response to oil agglomeration of coal.

10.45 - 11.15 ***Coffee Break***

11.15 - 11.45 D. Murchison - The influence of heating rate in laboratory and natural environments.

11.45 - 12.15 C. Diessel - On the Petrography of an unusual Coal Seam in the Sydney Basin, Australia.

12.15 - 12.45 A. Cook - Production of high quality metallurgical cokes from high inertinite coals in non-recovery coke ovens.

12.45 - 13.45 *Lunch*

13.45 - 14.15 L. Falcon and R. Falcon - Coal preparation and beneficiation: Advanced methods to characterise and quantify the beneficiation potential of coals of different types, grades, ranks and conditions.

14.15- 14.45 K. Kruszewska and V. du Cann - A simple and effective evaluation of reactive inertinite: A new approach.

14.45 - 15.15 B. Valentim, M. Lemos de Sousa, P. Abelha, D. Boavida and I. Gulyurtlu - Coal and char petrography, NO and N2O emissions from fluidised bed combustion: A case study.

15.15 - 15.45 *Coffee break*

15.45 - 16.15 A. Depers - International Accreditation in Organic Petrography: Past efforts, present status and future developments.

16.15 - 16.45 I. Suárez Ruiz, D. Flores, M. Marques, M. Martinez-Tarazona, J. Pis and F. Rubiera - Geochemistry and Mineralogy of Coals from Rio Maior (Portugal) and Peñarroya - Belmez - Espiel (Spain): Technological implications.

16.45 - 17.00 M. Lemos de Sousa and others - Conclusion

Conference Dinner

Thursday 14 August

9.00 - 18.00 Meeting of Commission I

9.15 - 9.45 Summary of Working Group Activities during the past four years : Walter Pickel.

9.45 - 10.15 Accreditation Programme - Convenor: Aivars Depers.

10.15 - 10.45 New ICCP Reflectance Standard - Convenors: Walter Pickel, Dave Pearson .

10.45 - 11.15 *Coffee Break*

11.15 - 11.45 Presentation by Duncan Murchison: The History of ICCP.

11.45 - 12.15 Standardization Working Group - Convenor: Harold Read

12.15 - 12.45 Sample Preparation Techniques - Convenor: David Pearson.

12.45 - 13.30 *Lunch*

13.30 - 14.15 Poster Session

14.15 - 14.35 Presentation by Ed Lester - Computer aided training tool for microlithotype analysis.

14.35 -14.50 Temporal variations of coal - Convenor: Lopo Vasconcelos.

14.50- 15.20 Review of new methodologies and techniques in Organic Petrology - Convenor: Lila Gurba.

15.20 - 15.45 Degradinite Working Group - Convenor: Peter Crosdale.

15.45 - 16.15 New Handbook Editorial Groups - Convenors: Walter Pickel, Petra David, Ángeles Gómez Borrego

16.15- 16.45 *Coffee Break*

16.15 - 18.15 Microscope Session

Friday 15 August

9.15 - 12.45 Meeting of Commission I

9.15 - 9.40 Presentation by Adam Kotas (Polish Geological Institute-Upper Silesian Branch Sosnowiec, Poland): 'Key Problems of Interpretation of Thermal Maturity Data in the Upper Silesian coal Basin (Poland)'.

10.00 - 10.45 New Handbook Editorial Groups - Convenors: Walter Pickel, Petra David, Ángeles Gómez Borrego

10.45 - 11.15 *Coffee Break*

11.15 - 12.45 New Handbook Editorial Groups - Convenors: Walter Pickel, Petra David, Ángeles Gómez Borrego

12.45 - 13.45 *Lunch*

13.45 - 14.45 New Handbook Editorial Groups - Convenors: Walter Pickel, Petra David, Ángeles Gómez Borrego

14.45 - 16.15 Closing Plenary Session of the General Assembly

9. ISO Coal Classification
10. Treasurer's Report

11. Reports from the Chairpersons of the Commissions
12. Report from the Council Meeting
13. Thiessen Award
14. New Edition of the Handbook
15. Statutes
16. Editor's Report
17 Nominations for elections to positions on ICCP council
18. Thiessen Medal
19. Presidential address

16.15 - 16.45 ***Coffee Break***

16.45 - 18.00 Closing Plenary Session of the General Assembly

Saturday 16 August

8.00 - 19.00 Field Trip to Zeeland

Preliminary Council Agenda, 55th ICCP Meeting, Utrecht, 2003

Items marked with an asterisk will be discussed. If discussion is not required on an item (that is the explanation and proposed motion are sufficient) the item will be adopted in the form in the Agenda papers without further discussion following adoption of the unstarred items

1.* Apologies from ICCP members for non-attendance
2.1.* Minutes of the previous meeting
2.2.* Starring of items and adoption of the unstarred items.
3.* Arrangements for the Utrecht meeting
4. Future meetings
    4.1* Arrangements for the meeting in Budapest in 2004
    4.2* Arrangements for meeting in Patras, Greece in 2005
    4.3* Invitation to Indonesia 2006.
    4.4 * Invitations to future meetings
5.* Membership
    5.1 Applications for Associate membership
    5.2 Applications for Full membership
    5.3 Applications considered by Council between meetings
    5.4* Resignations
    5.5 Membership Directory
    5.6* Honorary Membership
6. Thiessen Medal
    6.1 Thiessen Medal Award
    6.2* Production of new Thiessen Medal
7.* ICCP Award for postgraduate students
8.* Treasurers Report
    8.1* Treasurer's report
    8.2* Financial procedures
    8.3* Budget 2003/2004
    8.4* Standard for acquittal funds
9.* Editor
    9.1 Activities for 2002-2003
        9.1.1 ICCP News
        9.1.2 ICCP Member's Photos
        9.1.3 ICCP Work in Progress series
        9.1.4 Revision of ICCP Statutes
        9.1.5 Copyright
        9.1.6 Revenue
    9.2.1 Proposals for 2003-2004
        9.2.1.1 Number of editions
        9.2.2 Budget estimates for 2003-2004
        9.2.3 CD ROMs from working groups
10.* Policy, payment and membership
11.* Website
12. New Handbook
13.* Elections
14. UN Relations
15.* Status of ICCP
16* Administration of Accreditation Program
17*. Revision of Statutes
18.* Standards for acquittal of ICCP funds
19. Feedback from members
20* Proposals submitted by Harold Read for the 2002 meeting
21* Other business

Field trip to Zeeland: Dutch Wetlands and River delta

On the field trip we will mainly concentrate on the development of the coastal-landscape of Dutch province Zeeland during the past 10.000 years. This also includes the influence of the habitation history.

As indicated by the name of the province, Zeeland ('Sealand'), the major part of the (sub) surface sediments in this province is of marine origin.

The Holocene coastal development of Zeeland can be subdivided into five major depositional phases,

9000-7000 BC : Terrestrial period
7000-3100 BC: Inundation of Zeeland
3100BC-600 BC: Regressive coastal development
600 BC-1000AD: Inundation of the peat landscape
100AD - present: Period of human influence

The terrestrial period was characterised by a rapid sea level rise, resulting in a gradual innundation of the, up to then, dry North Sea area. Zeeland was not reached during this time and no marine deposits exists form this period. Gyttja and organic freshwater clays can be found in a palaeo-valley of the river Schelde. Around 7000 BC Zeeland became part of the marine realm. At the margins of the expanding marine area, peat developed. The rising sea level caused the peat zone to shift landwards. In the upper part of these deposits a clayey *Phragmites* peat layer is found, a first indication of the subsequent development of a regressive coast. The regression caused the several tidal inlets to change into an almost completely closed shoreline consisting of coastal barriers and dunes. Behind this system, large-scale peat bogs developed. As a consequence of coastal erosion, the sea breached the closed shoreline of barriers and dunes. Locally the depressions on the dune areas and parts of the peat bogs were inundated. On the other hand, a large quantity of sand became available, which was deposited on the beach and formed steep high dunes. From 1000 AD onwards, man's activity (dike building) became a major factor in coastal landscape development. As a consequence, the extent of the tidal influenced zone decreased considerably.

Kinderdijk

On the way to Zeeland we will pass the area of Alblasserwaard, which lies (as about 70 % of the Netherlands) below the sea-level. Problems in flooding periods became more and more apparent since the 13th century. To get rid of the excess water in the polders, long canals were dug . As this was not sufficient, it was decided to build a series of windmills which would pump the water into a reservoir and into the river Lek. We will stop at Kinderdijk, a small village to look at the canals and several windmills, which were built in the 18th century.

Brabantse Wal

The next stop will be the 'Brabantse Wal' a transition between sands of higher Pleistocene and the Holocene sea-clay area. In the area of Hoogerheide/Galfven we will see an erosive cliff (made by the river Schelde), which is characterised by a 'high' relief of 15-20 m. This is very special for this part of the Netherlands.

photo: M.E. Egthuijsen

Veere

On the way to Walcheren we will have lunch in the small town of Veere. It has a small picturesque harbour which once gave direct access the North Sea. Founded 700 years ago in 1296, Veere's history was caught up in the militairy, religious and commercial rivalries of the Middle Ages. At first mainly a fishing port, Veere became the main port for Scottish commerce with Flanders, Holland and Brabant in the 16th. century. Wool was the major import (to be woven and then exported as fine cloth), and coal, tiles, leather, brassware, wines and spirits and, after 1630, shiploads of arms and ammunition for the Scottish and English armies.

Gapinge

In the afternoon we will continue the trip to the area of Gapinge where we look at two cores with different tidal deposits and peat. Especially for this purpose, two wells of about 15 metres depth will be drilled for the participants of this field trip.

Breezand

On the way back to Utrecht we will stop near Breezand , where we will have a beautiful view over the Northsea and the Veerse Dam (and of course a drink!).

More information about the palaeogeographic development of Zeeland and its different sediments as well as the beautiful landscape of Zeeland will be posted on the website of the 55th meeting.

Dutch Geology, a short course

As most of you who will come to Utrecht by plane, you're expected to land on Amsterdam Airport. The captain may tell you it's so and so many metres below sea level and this is true. The whole truth is, however, that you will step onto the bottom of an open pit mine where peat has been mined since the middle ages. Afterwards, it was filled with ground water and called the Lake of Haarlem [*Haarlemmermeer*]. Only in the 19th century the water that had filled the mine was pumped off to prepare for modern times. This is to give you a fair warning. Things in Holland are never what they seem to be. The Dutch love nature, provided they have a say in its shape.

Basically there is nothing wrong with Dutch geology. That is, if you prefer sailing to mountaineering. Like any decent country we have Carboniferous deposits, though deeply hidden and nicely covered by permeable aeolian deposits from the Rotliegendes, These are sealed on top by Zechstein salt layers deposited from the hot Permian sea. It needs some drilling but the treasure is there and we feel very comfortable having natural gas at our disposal.

We skip here the time of the dinosaurs although the south of the country - Heerlen and surroundings - take pride in having excavated a fresh specimen with a brand-new family name. Its surname is Ber.

Most of the country as seen today got its shape not before 0.25 Ma BP, at the start of the Saalian, the last but one ice age. During the next 0.12 Ma huge masses of Scandinavian material have been transported by glaciers that extended to where the river Rhine is running now. Sands were pushed to the west, to form a safe place for building the city of Utrecht. Another material that came in handy was enough iron ore to last for the coming iron age. More important in the 20th century was and is the 'Schiebelehm' the bottom material of the glaciers. Because this is very poorly sorted, as well as compressed under shear stress at very high pressures, it makes a concrete far more impermeable than any man-made stuff. For that reason it was successfully used as a dyke-building material in the thirties, when the IJsselmeer was separated from the North Sea.

During the Weichselian nothing much happened Glaciers stayed where they belong, in Scandinavia, but it was uncomfortably cold here like it is now in Siberia Of course there was no proper food so men and other animals resented settling in the area. England was part of the continent then, a problem that was finally solved 10,000 years ago when the North Sea started to fill up, thanks to the greenhouse effect. From that day on the Sea has shaped and re-shaped the land and so did men.

At the time Caesar arrived the situation was basically as it is now, though different in detail. The Rhine took the same course as now, just some tens of kilometres more to the North. At the other side of the river were wetlands with thick layers of peat, one good reason for any army to stop there.

Along the coast ran a beach barrier made up of sand, yet fertile enough for oaks and corn to grow. The beach barrier has been the basis for founding a number of cities in the middle ages. While Utrecht was built on Saalian glacier relicts, Haarlem and Delft, in the West, were built on post-Weichselian marine deposits.

This barrier formed an almost uminterrupted defence wall against the sea in 2000 BP, when the Romans arrived and decided to settle for the time being. Around 1000BP, and particularly in the next three centuries, flooding took away major parts. However, large transgressions did not only inundate the land but they also had the beneficial effect of opening up clogged water courses and improving drainage of the wetlands. The ultimate effect was that more and more of the backland could be used for cultivation and habitation. This was necessary because the beach wall had been seriously damaged by depletion of soil and timber after the 10th century which was a very dry period.

Of course there were also major areas that were lost forever or, at least for centuries. Not far from Utrecht, up North, is the shoreline of the IJsselmeer, once an bay of the North Sea. It was formed during a huge flood in the 14th century and it remained an inner sea till the thirties of the 20th century. Only then we had the machines to shut it off from the North Sea. The material for the dyke as I told you before, was already there since the Saalian. Closing off the sea meant that a number of former Hanze cities that in the 17th century traded with Hamburg and the Baltic were degraded into yachting harbours. Like, for example, the city of Hoorn that once gave its name to Cape Horn. Only part of the IJsselmeer area was recovered for agricultural purposes, the remainder being a valuable supply of drinking water.

In the seventies another project to keep the sea outdoors, was successfully attempted. This time in the South western province of Zeeland. In the 12th century the sea had penetrated through the beach barrier. On that occasion huge areas of peat had been swept out to sea, leaving behind only parts of heavy clay that are islands since. A plan to shorten the present beach line by an interconnecting dyke at the seaside was raised after a storm whereby great parts of the province were inundated. Though safety is the major object, a secondary aim is the protection of breeding seafood.

When you come to Utrecht we hope to tell you more about the project and show you this part of our geology. As you see it's mainly about water. As long as the sea level is rising and, equally important, the Northern part of the country is moving downward, this story will continue..

DEADLINE FOR NEXT ICCP NEWS :

13TH OCTOBER 2003

ICCP Council Vacancies 2004

The following ICCP Council positions fall vacant after the 2004 meeting in Budapest :

- General Secretary
- Editor
- Chair Commission I
- Secretary Commission I
- Secretary Commission III

Elections will be conducted for these positions during 2004. As in the past and in accordance with the Statutes, recommendations will be made by Council to the General Assembly to fill these vacancies. Additional recommendations will be taken from the floor.

Members who are eligible to vote for these positions (see below) and who attend the meeting will be able to nominate form the floor in the usual manner.

Eligible members (see below) who are **UNABLE to attend the meeting** are also invited to nominate candidates for consideration by the General Assembly. Nominations for the position of General Secretary should be sent to the President. All other nominations should be sent to the General Secretary. **Nominations taken in this way will close one week before the meeting** (at 17:00 hrs on Friday August 1, 2003) to give the General Secretary and President time to ascertain that the candidate is willing to stand.

It should be noted that the Statues (11.c.ii) state: "*Eligible members may then nominate no more than two additional names for election to any office except that of Editor. The votes of more than 10% of eligible members present at the plenary session shall be required for nomination of candidates from the floor of the General Assembly.*" i.e. the General Assembly will decide which, if any, of the nominated candidates (up to 2) are put forward for election along with those nominated by the Council.

Voting Eligibility

For the positions of General Secretary and Editor, only FULL members are eligible to nominate and vote (Statute 11.b.i).

For the positions of Commission Chairs and Secretaries, FULL and ASSOCIATE members belonging to the respective Commission are eligible to nominate and vote (Statute 11.b.ii).

News From Commission I

Apart from the accreditation programme, the ICCP reflectance standards are also starting to take off. The Sydney standard was used to calibrate standards of 10 laboratories so far and more are expected to be calibrated soon. For detail see: last Newsletter, Com. 1).

The *Standardization* working group is expected to continue its round robin. One new member joined the group. Everybody who wants to join newly is very welcome. Please contact Harold Read (mailto:coalpetrography@bigpond.com).

The editorial work, on '*Graphite, semi-graphite natural coke and natural char*', '*Huminite*' and '*Liptinite*' are finished or close to being finished and all three are expected to be in print or in press with Elsevier by the time of the Utrecht meeting.

Petra David's *compilation of a handbook* with the support of many is making good progress.

The Working Group to Investigate the *Status of Degradinite* of Peter Crosdale has now six member and its first round robin happening.

The meeting of commission one will cover the following issues:

1. Chairman's Summary of the last years' activities
2. Accreditation Programme (Aivars Depers);
3. New ICCP Reflectance Standard (Walter Pickel, Dave Pearson);
4. Standardization Working Group (Harold Read);
5. Review of new methodologies and techniques in Organic Petrology (L. Gurba).
6. Sample Preparation Techniques (David Pearson);
7. Temporal variations of coal (L. Vasconcelos)
8. New Handbook Editorial Groups (Petra David, Ángeles Borrego)
9. Degradinite Working Group (Peter Crosdale)
10. "Key Problems of Interpretation of Thermal Maturity Data in the Upper Silesian coal Basin (Poland)" by Adam Kotas (Polish Geological Institute-Upper Silesian Branch Sosnowiec, Poland);
11. Microlithotype Presentation (Ed Lester)
12. Microscopy session

Please bring any sample you think might be of general interest for microscopy session. I think last year's successful session should encourage us to continue this exercise. If anyone has any additional topic to be dealt with at the meeting, please contact Deolinda or Walter.

We would like to thank all conveners and active members for their enthusiasm and effort and am looking forward to a successful meeting in Utrecht

Regards

Walter Pickel	Deolinda Flores
Chair Comm. 1	Secretary Comm. 1

Accreditation Programme Update

Since the last update, two more petrographers have been granted Re-accreditation. These are:

- M. Manuela Coelho Marques Barbosa Correia
- Petra David

The Committee congratulates both petrographers on their achievement.

The certificates were dispatched on 18th. June, so expect something in the post very soon.

Some results have still not been received and all involved have been contacted. New due by dates have been negotiated. Unfortunately, two petrographers have left the accreditation scheme after they indicated, in early 2002, that they would participate.

Samples have been dispatched to petrographers that are being re-tested after the 2002 Exercise evaluations. Three new petrographers are being tested to evaluate their analytical skills and one petrographer has re-joined the accreditation scheme after re-entering the workforce. All initial and follow up tests are cost free to the petrographer or laboratory. If laboratories have budding petrographers that have some experience in both maceral and vitrinite random reflectance analyses, and they would like to have these skills evaluated this year, then please contact the Organiser, as a matter of urgency.

2004 Exercise

A new structure for running the accreditation scheme has been devised, based on the experience of the Organiser and through positive comments received from former and current participants. This scheme is in constant evolution, so any feedback from participants is more than appreciated.

The 2004 Exercise timetable is:

(1) Organiser contacts individuals/laboratories Nov.-Dec. 2003. "New" petrographers are welcome to join, but they will need to contact the Organiser;

(2) invoices dispatched Dec. 2003. Payment to be made before 31st. January, 2004;

(3) samples and instructions to be mailed out in Feb. 2004;

(4) **all data must be received by 31st. August, 2004.** No excuses for late receipt will be accepted after this date;

(5) Preliminary Assessments e-mailed to participants during September, 2004. Participants to check their evaluations and results against the Group Means and Group Standard deviations;

(6) **all mounted coal blocks must be returned by 16th. October, 2004.** Non-receipt of samples may lead to the Organiser withholding the dispatch of the Final Assessment and accreditation certificate;

(7) all Final Assessments dispatched by the end of October, 2004. Any appeals against assessments **must be received before 30th. November, 2004**;

(8) certificates dispatched to successful participants in mid-December, 2004;

(9) ICCP website "List of Accredited Petrographers" updated in early January, 2005; and

(10) appeals finalised. Re-testing and initial testing of petrographers during 2005.

The introduction of a more formal timetable has been found to be necessary due to the extra time spent by the Organiser in regularly contacting participants for their registration fees and results. The return of samples is still an issue, with some laboratories being reluctant to abide by instructions, as sent with the coal blocks.

Aivars Depers
Deolonda Flores
Rosa Menédez
Walter Pickel
Accreditation Committee

News From Commission II

Extended reports of the Thermal Indices Working Group (Convenor Carla Araujo) and the Qualifying System for Reflectance Analysis Working Group (convenor Ángeles Gómez Borrego) are presented in this edition of ICCP News. More information can be found at the web site http://www.iccop.org and follow the Commission II links.

News From Commission III

At this year meeting, Isabel Suárez Ruiz, convener of coal blends working group, will report on the results of 2003 Round Robin exercise and present the final report of the working group. It is also planned to make a preliminary presentation and the planning for future activities concerned to coal blends accreditation program.

Combustion working group will deal with the presentation of the CD atlas that will be produced. Edward Lester will basically demo the program and make copies available for those interested.

Regarding the working group on estimation of structural order, convened by Slawka Pusz, the results from the Round Robin exercise with four samples obtained at different temperatures will be discussed in terms of comparison of optical parameters with structural studies made by XRD and TEM.

A reactivation of the WG dealing with automation and coke petrography is expected in this meeting, with the election of the convener of the latter.

Finally, the new working group dealing with improved image analysis for general purposes, convened by Cristina Rodrigues, will decide on the specific technical aspects (sampling, preparation, etc) discussed at Pretoria.

Rosa Menéndez
Chair Comm. III

The Application of Isotherm Studies to Evaluate the Coalbed Methane Potential of the Waterberg Basin, South Africa

Abstract of PhD Thesis by
Cristina F. A. Rodrigues

The present work deals with prospecting and exploring for Coalbed Methane (CBM) in the Waterberg Basin, South Africa.

The Waterberg Basin is one of the six basins defined in the Limpopo Province of South Africa, which strikes approximately 88 km in a West - Easterly direction and 40 km in a North - South direction, extending westwards into Botswana. The Waterberg Basin is considered to be an embayment of the much larger Kalahari Basin rather than part of the Main Karoo Basin. The coal deposits are restricted in two major tectonic settings, viz.: stable cratonic platforms and fault-bounded rift basins. In this basin, rocks of the Karoo Supergroup are confined to an area that is faultbounded along the southern and northern margins, forming a semigraben. To the north, the Zoetfontein Fault forms the northern boundary of the basin with the "Archaean" Granites, and to the south the Eenzaamheid Fault forms the southern limit with rocks of the Waterberg Group.

The Waterberg Coalfield was discovered accidentally in 1920 while drilling for prospecting water on the farm Grootegeluk, and since then more than 400 coal exploration boreholes have been drilled in the coalfield.

The major purpose of the present work consists in the application of a selected suite of steps, that are part of a structured methodology for prospecting/exploring CBM, which should lead to the identification of those areas with high production potential. The validation and interpretation of the results should contribute to the selection criteria for the implementation of subsequent pilot tests required to better define the real production potential of the gas reservoir. The prerequisites selected result from current knowledge of the genesis and storage of coalbed gas, and from general criteria which are based on geological, petrological and organic geochemistry studies.

In order to address correctly the above objective, this thesis is divided into two distinct parts:

- Coalbed Methane: Relevant aspects, and
- The Waterberg Basin: A case study, followed by conclusions

In the first part (Coalbed Methane: Relevant aspects) the author assembles and reviews a number of different issues such as historical review of CBM investigation, the principles of coalbed gas generation, and the methodology required to perform a suitable study. The following sections constitute this part:

- Understanding Coalbed Methane and historical review of main contributions;
- Generation of Coalbed Hydrocarbons;
- Coal as a reservoir;
- Diversity of the natural gas composition in reservoirs;
- Basic methodology in prospecting/exploring for Coalbed Methane; and
- Coalbed Methane production.

In the second part (The Waterberg Basin: A case study) the author describes the different studies employed to evaluate and validate the Waterberg Basin as a potential CBM reservoir. Two main items are considered: (i) the geological setting, describing the stratigraphy and the structural model of the basin and (ii) the materials and methods and results obtained from experiments and tests performed.

The following test requirements were selected from the suite of requirements that are normally proposed for prospecting and exploring for CBM:

- Gas sorption isotherms;
- Coalbed gas content;
- Chromatographic analyses, and
- The cleat system.

It comes as no surprise that most of the present work focused on the study of gas sorption isotherms the main objective of the thesis.

The section on Gas sorption isotherms includes a description of the Langmuir method, the methodology to develop the sorption process, and a comprehensive analysis of the variables that influence the gas sorption process, *viz* rank, petrographic composition, mineral matter, moisture, temperature, pressure, gas composition, and compressibility factor.

The fundamental results and conclusions are summarised as follows:

- In the gas isotherm technique, significant improvements were made with regards to: (i) the configuration of the apparatus, (ii) the technique itself, (iii) the precisions for the most relevant parameters, those which are capable of inducing changes in gas sorption behaviour, and (iv) innovative issues were introduced such as the effect of gas compressibility factor in the results.
- The integrated study of gas sorption isotherms, gas content measurements (Q2 and Q3) and chromatographic analyses of residual gas, permitted to draw a comprehensive picture which hopefully will contribute to the correct evaluation of the Waterberg Basin as a potential CBM deposit. In fact:
    - Data from the desorbed gas tests showed that Q2 values are extremely high (usually > 90%) when compared to Q3(residual gas). This evidence bodes well for gas recovery;
    - Chromatographic analyses of both desorbed gas and residual gas permitted to conclude that the recoverable gas (desorbed gas + "lost gas") has, in terms of CBM "quality", a suitable composition, containing approximately 70% to 88% methane;
    - In combining the maximum sorption capacities of the samples, as revealed by the sorption isotherm tests, with data from residual gas content, and filtering the results on the basis of a Q3 < 7%, three samples were selected as those with the most promising characteristics: WTB 5/37, WTB 6/16 and WTB 12/69.
    - The study of the recovery factor, determined by the use of sorption isotherms permitted to verify that samples WTB 6/19, WTB 12/69 and WTB 12/72 revealed the highest potential values.
- Finally, the study of the cleat system, as a

separate section, presents an innovative proposal that attempts to address yet unanswered and unresolved questions, such as, What is the spatial distribution of the different classes of cleats in a particular coal seam, and what is the frequency of their connectivity?

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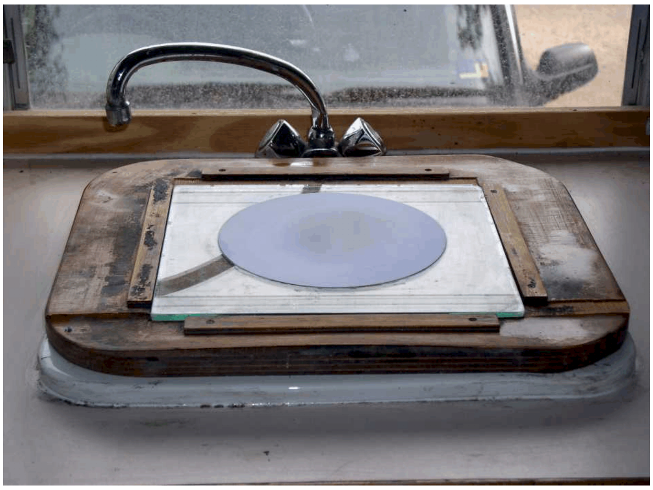
Low Tech Sample Polishing in the 21st Century

A colleague recently observed that they had difficulties with some ICCP exercises because of the lack of a polishing lab. This lead me to observe that I too do not have polishing lab in the sense of what most people would consider to be a polishing lab. Neither do I have a technician to crush the coal, prepare the blocks and then polish them. I have an extremely low tech lab where the only machine is an old fashioned mechanical coffee grinder used for crushing my petrographic samples. Nevertheless I am able to prepare samples to a high quality.

Don't get me wrong, James Cook University has some of the best petrographic preparation facilities that I have seen anywhere. It is just that it can take me 2 to 3 months to get my samples through the system. An unacceptable time frame, especially when hand polishing using low tech equipment takes a lot less than 10 minutes per sample.

So what do I do? Over the sink in my lab I place a board which is designed to sit firmly in the sink to be held steady. The top of the board is flat with 4 strips of wood screwed to it to make a square. The square is used to hold pieces of plate glass onto which I glue my grinding and polishing cloths. Polishing is done by hand in 4 stages : 1. grinding using 60 grit wet and dry paper; 2. grinding using 600 grit wet and dry paper; 3. polishing (1 minute) using 1 micron alpha alumina on a Leco ‘Pan W'; 4. final polishing (1 minute) using colloidal silica (0.05 microns) on a Leco ‘imperial cloth'. The wet and dry paper comes as sheets which are glued to the plate glass using adhesive from a spray can while the polishing cloths are self adhesive. Simple (I can even teach students to polish!), fast, gives good results and cheap to set up.

So, no polishing lab? No funds to buy expensive machines? No funds to employ a technician? Then try doing it yourself by hand!



Peter Crosdale
mailto:Peter.Crosdale@jcu.edu.au

Answer to “Know your Coal Petrologist #5”

Barbara Kwiecinska (right) teaching a few new moves in the ‘Graphite Twist’. We will have to wait for the minutes from the Utrecht meeting to see if this method was successful in attracting new ICCP members!

Wanted to buy

One point counter and point counting stage suitable for maceral analysis. Contact

Peter Crosdale
School of Earth Sciences
James Cook University
Townsville, Qld 4811
Australia
Ph. +61-7-4781 5195 Fax. +61-7-4781 5167
mailto:Peter.Crosdale@jcu.edu.au

Answer to "Know your Coal Petrologist #6"

Duncan Murchison (left) remaining unconvinced by Alan Davis's (right) explanation that a fine port represents better value for money than a good single malt whisky.

(Advertisement)

Employment

Pearson Coal Petrography, Inc.,
Beckley Laboratory,
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A vacancy exists in our laboratory in Beckley for a coal petrographer. Suitably qualified individuals will be US citizens, or possess an alien registration card. This is a full-time, permanent position.

E-mail details of your employment-history and schooling, with salary expectation to

mailto:ehatfield@coalpetrography.com or,
mailto:dpearson@coalpetrography.com

News from TSOP

Initiative to Promote Coal Science

The TSOP Council has unanimously approved a proposal to promote coal science at universities around the world that do not have the resources to acquire essential current coal science publications, such as the International Journal of Coal Geology. To help address this situation TSOP has created a fund to underwrite the cost of a two-year subscription to the journal.

The recipients will be obligated to share the journal with his/her students and colleagues and to encourage the students, faculty, and colleagues from the country and the region to contribute appropriate articles to the journal. Recipients who are successful in generating articles for the journal will continue to receive complimentary annual subscriptions.

Elsevier has agreed to make the journal available a deeply discounted rate provided that TSOP accepts responsibility for distribution.

This activity should stimulate interest in coal science in developing countries. Other benefits would include dissemination of current coal science information to a generation of enthusiastic young scientists and an increase in contributions to the journal from a significant, but largely untapped, source.

A new committee (Committee for Promotion of Coal Science) has been established to operate the program. The committee will be responsible for soliciting applications (preferably TSOP members), for selecting the most deserving candidates, for distribution the Journal issues, maintaining accurate records, and for soliciting contributions to sustain the initiative. Contributions to cover the cost of the first two subscriptions have already been pledged.

Anyone interested in submitting an application for the Journal is invited to send in a one-page letter describing how they would use the opportunity to promote coal science in their school and in their country, including comments as to how they will encourage submission of papers to the International Journal of Coal Geology during the 2-year free subscription period The proposal should accompanied with a letter confirming that subscription to the journal would cause financial hardship. The letters should be sent to

Robert B. Finkelman
U.S. Geological Survey
Mail Stop 956
Reston, VA 20192, USA.

Contributions to support this effort should be sent to

Mike Avery
Geological Survey of Canada
P.O. Box 1006
Dartmouth, NS B2Y 4A2, Canada

Should this project prove to be successful, would consider expanding the program to include the Review of Paleobotany and Palynology.

Robert Finkelman
mailto:rbf@usgs.gov

Call for Papers

Technical Aspects of Generating Hydrogen Fuel From Coal

A Special Volume of the International Journal of Coal Geology,

Guest Editors T.A. Moore and L.W. Gurba

Within 20 to 30 years, Hydrogen Fuel will be common. What role will fossil fuels, especially coal, play in the medium to long-term generation of hydrogen? What are the technical aspects related to coal as a source of hydrogen?

Papers are being requested which address…
- Effects of coal chemistry
- The role of coal maturation
- Compositional controls (both organic and inorganic)
- Gasification issues
- Resource assessment and world wide locations

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If you are interested please submit a TITLE, LIST OF AUTHORS, SHORT PARAGRAPH on the proposed article. The dates for this publication are:

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mailto:tim.moore@solidenergy.co.nz

ICCP Publications

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10 - 16 July 2003

Carbon 2003, Oviedo, Spain
Contact : Dr. J.J. Pis or Dr. R. Menéndez
mailto:jjpis@incar.csic.es
mailto:rosmenen@incar.csic.es
http://www.carbon2003.com

10 - 16 August 2003

55th Annual Meeting of ICCP, Utrecht, The Netherlands.
Contact : Petra David
mailto:p.david@nitg.tno.nl
http://www.iccop.org
http://www.nitg.tno.nl/eng/55iccp.shtml

10 - 16 August 2003

XVth International Congress on Carboniferous and Permian Stratigraphy (XV ICC-P), Utrecht, The Netherlands.
Contact : Petra David
mailto:p.david@nitg.tno.nl
http://www.iccop.org
http://www.nitg.tno.nl/eng/iccp.shtml

15 - 19 September 2003

20th International Pittsburgh Coal Conference, Pittsburgh, USA
http://www.engrng.pitt.edu~pccwww/

21 - 24 September 2003

TSOP Annual Meeting, Washington DC, USA.
mailto:pwarwick@usgs.gov
http://www.tsop.org/mtgdc.htm

20 - 22 October 2003

International Ash Utilization Symposium, Lexington, USA
http://www.flyash.org

2 - 6 November 2003

12th International Conference on Coal Science, Cairns, Australia.
mailto:iccs@aie.org.au
http://www.aie.org.au/iccs

September 2004

56th Annual Meeting of ICCP, Budapest, Hungary
Contact : Dr Mária Hámor-Vidó
mailto:vidom@mafi.hu
http://www.iccop.org

27 September - 1 October 2004

21st Annual TSOP Meeting, Sydney, Australia
Contact : Neil Sherwood or Colin Ward
mailto:Neil.Sherwood@csiro.au
mailto:C.Ward@unsw.edu.au
http://www.tsop.org/mtgsyd.htm

September 2005

57th Annual Meeting of ICCP, Patras, Greece
Contact : Assoc. Prof. Dr. Kimon Christanis
mailto:christan@upatras.gr
http://www.iccop.org

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