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INTERNATIONAL COMMITTEE FOR COAL AND ORGANIC PETROLOGY

COMMISSION II

PSEUDOVITRINITE WORKING GROUP

Progress Report
(To be presented in Bucharest, Romania: September 1999)

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Appendix 1. Bibliography

Gurba, L.W. and Ward, C.R., 1999. Pseudovitrinite. Progress Report for the International Committee for Coal and Organic Petrology, Pseudovitrinite Working Group. 51st ICCP meeting, Bucharest, Romania, September 12-18,1999. https://www.iccop.org/commissions/commission-ii/working-groups-ii/.

ROUND ROBIN EXERCISE 1998/1999

The purpose of this exercise was to investigate further the optical and morphological properties of the material described by Benedict et al. (1968) as 'pseudovitrinite", and to identify some of the criteria which may or may not be valid in recognition of pseudovitrinite if a lump of coal (not a grain mount) is investigated.

Two sets of coal samples representing the Early Permian high-volatile bituminous coals from the Gunnedah Basin, NSW, Australia were prepared as single polished lumps of coal cut perpendicular to bedding. Samples were taken from a single borehole section, approximately 100 metres apart. Participants were asked to measure maximum and minimum reflectance on vitrinite group macerals and note the morphological characteristics of the measured layer (e.g. the presence of slits, any mineral matter, the angle and size of slits and cleats).

Nine participants were involved in the exercise. The results are presented in Appendix 1.

The principal conclusions of the exercise were:

- Most petrographers identified three populations within the vitrinite group. These were: pseudovitrinite, collotelinite (excluding pseudovitrinite) and desmocollinite;
- Pseudovitrinite occurs in thick homogeneous layers, without minerals;
- Pseudovitrinite (if identified) has the highest reflectance in the samples studied, and a characteristic slit pattern;
- There is some overlap, but layers containing slits have the highest reflectance;
- The slit pattern is perpendicular or oblique to bedding; slits may contain small pyrite inclusions;
- In the samples studied the range of maximum reflectance within the vitrinite group macerals for most individual petrographers remained within 0.02%.

PHOTOMICROGRAPHS

There has been additional input of microphotographs to the database from Raphael Javier from a coal mine in La Houvre, France. The Convenors have begun to compile a poster from photomicrographs in their possession, including those provided by Working Group Members as well as from published data. All photographs will be tabled at the meeting in Bucharest. The photographs show the main features of pseudovitrinite, and will help to establish the criteria for distinguishing pseudovitrinite from other vitrinite types.

Our photographic database now contains examples from the following sequences:

TABLE 1. Microphotographs

Location	Coal Rank	Age
Gunnedah Basin, Australia	0.76-1.1 Rmax	Early and Late Permian
Bowen Basin, Australia	1.1 % Rmax	Permian
Sydney Basin, Australia	0.76-1.0 Rmax	Permian
England		Carboniferous
Afghanistan		Jurassic
Germany		Carboniferous
Poland		Carboniferous
Spain		
France		
USA		Carboniferous

We are still open for additional photographs. Photographs should be accompanied by information (if possible) on the locations, age of the coal, and the reflectances of collotelinite and pseudovitrinite.

BIBLIOGRAPHY

There have been a few additions to the list presented by the Convenors last year. A copy of the list to date is included as Appendix 3. The bibliography consists of 45 research papers and 11 textbook references related to or dealing with pseudovitrinite. Topics covered by the references include the occurrence, origin, chemistry, maceral composition, utilisation and many other aspects. References that are not easily accessible from libraries can be provided on request to the Convenors.

ETCHING and OTHER TESTS

Recent research at the University of New South Wales has found that prolonged exposure of polished sections to some types of immersion oil produces selective etching of the pseudovitrinite layers, without significantly affecting other vitrinite types. Details of the botanical structure in pseudovitrinite have been revealed by this etching process.

The results suggest a distinct difference in composition and/or botanical structure, relative to other vitrinite types in the same coal samples. Further research is in progress.

PROPOSED ACTIVITIES FOR 1999/2000

- **Compilation of Individual Contributions and Final Report**
  The draft of the final report on our "state of knowledge on pseudovitrinite" (a white paper) will be circulated to those willing to actively participate in the final edition (Appendix 3). The main topics to be discussed include:
    - Pseudovitrinite: does it exist?.
    - Identification criteria.
    - The occurrence and **origin of pseudovitrinite**.
    - Chemistry of macerals within the vitrinite group.
    - Technological properties.
    - Use of the name 'pseudovitrinite' in general, and in publications in particular.

  It is intended to publish the final report as a research paper.

- **Preparation of Poster**
  A poster containing microphotographs of pseudovitrinite provided by the members of the Pseudovitrinite Working Group, and including a short description of pseudovitrinite, will be finalised early next year. It will be available from the Convenors at a cost to cover printing and postage. An example of the material will be presented during the meeting in Bucharest.

- **Development of Sample Bank**
  A sample bank has been developed for individual researchers to use. Samples have been prepared as grain mounts or lumps of coals for petrographic examination. However only a very small amount of sample is available for additional testing. The material will be provided only to those who expressed earlier their willingness to perform some testing. The available set of samples prepared for petrographic examination represents coal containing pseudovitrinite from different geographic locations and ages. These include samples of Early and Late Permian coals from Australia, Carboniferous coals from the US and Germany, and Jurassic coal from Afghanistan. Please contact the Convenors if you are interested in examination of these samples.

We would also appreciate any New Zealand and South African samples.

- **Additional Testing**
  The Convenors will contact those members who expressed their willingness to participate in the following activities.
  1. Etching tests.
  2. Evaluation of thin sections.
  3. Coking tests.

- **Archives**
  Since the time the Pseudovitrinite Working Group was reactivated (in 1996) a large amount of archival material has been collected. This includes full documentation of the previous Working Group's activities from 1966 to 1976, provided by Dr H. Smith and Dr J. Prado. Following a suggestion by Dr Harold Smith, it is proposed to prepare and store these unique, irreplaceable documents in Archives of the ICCP.

  Any comments and other suggestions are welcome.

Because the previous Pseudovitrinite Working Group did much work on reflectance determination and maceral composition of coals containing pseudovitrinite (see Appendix 2 and 3), we suggest not repeating a great deal of work along this line of but concentrating instead on the specific topics listed above.

This report will be circulated during the 51st ICCP Meeting in Bucharest to members involved in the activities of the Pseudovitrinite Working Group, and will be mailed to those members who do not attend the meeting. All comments and suggestions should be forwarded to the Convenors before the end of February 2000.

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APPENDIX 1

ICCP PSEUDOVITRINITE WORKING GROUP

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compiled by L.W. Gurba and C.R. Ward
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