

## Update from Identification of Thermal Maturity Relevant Organic Matter Working Group of Commission II

After a long delay, the results of an interlaboratory exercise run in this working group in 2015-2016 were published in the journal *Marine & Petroleum Geology* in 2020 (Hackley et al., 2020). The delay was associated to finding the most appropriate means for statistical consideration of the data which permitted a positive outcome, despite wide disparities in the contributed results. The paper discusses thirty-seven independent sets of results from laboratories in the Americas, Europe, Africa and Australia. The samples used for this study were from six thermally mature shale plays under active exploitation for oil and gas production in the United States. This work builds upon a prior interlaboratory study (Hackley et al., 2015) using the ASTM D7708 *Standard Test Method for Microscopical Determination of the Reflectance of Vitrinite Dispersed in Sedimentary Rocks* (ASTM, 2011), which also is a product of the working group.

The new paper has started to receive citation in 2021 whereas the previous work from 2015 has earned 90+ citations, illustrating the importance of ICCP working group results to the scientific community.

Activities of the working group were curtailed in 2020 due to Covid-related lab access restrictions but as conditions continue to improve in the United States, a resumption of working group activity is planned. Please stay tuned for news about an image-based interlaboratory exercise in the coming months.

Please contact Paul Hackley [phackley@usgs.gov](mailto:phackley@usgs.gov) for any questions or to participate in working group activities.

### References

Hackley, P.C., Araujo, C.V., Borrego, A.G., Bouzinos, A., Cardott, B.J., Carvajal-Ortiz, H., Cely, M.R.L., Chabalala, V., Crosdale, P.J., Demchuk, T.D., Eble, C.F., Flores, D., Furmann, A., Gentzis, T., Gonçalves, P.A., Guvad, C., Hámor-Vidó, M., Jelonek, I., Johnston, M.N., Juliao-Lemus, T., Kus, J., Kalaitzidis, S., Knowles, W.R., Li, Z., Macleod, G., Mastalerz, M., Menezes, T.R., Ocubalidet, S., Orban, R., Pickel, W., Ranasinghe, P., Ribeiro, J., Rojas, O.P.G., Ruiz-Monroy, R., Schmidt, J.S., Seyedolali, A., Siavalas, G., Suarez-Ruiz, I., Vargas, C.V., Valentine, B.J., Wagner, N., Wrolson, B., Zapata, J.E.J., 2020, Testing reproducibility of vitrinite and solid bitumen reflectance measurements in North American unconventional source-rock reservoir petroleum systems. *Marine and Petroleum Geology*, v. 114, Article No. 104172, <https://doi.org/10.1016/j.marpetgeo.2019.104172>.  
 Hackley, P.C., Araujo, C.V., Borrego, A.G., Bouzinos, A., Cardott, B., Cook, A.C., Eble, C., Flores, D., Gentzis, T., Gonçalves, P.A., Mendonça Filho, J.G., Hámor-Vidó, M., Jelonek, I., Kommeren, K., Knowles, W., Kus, J., Mastalerz, M., Menezes, T.R., Newman, J., Oikonomopoulos, I.K., Pawlewicz, M., Pickel, W., Potter, J., Ranasinghe, P., Read, H., Reyes, J., Rodriguez, G.D.L.R., Fernandes de Souza, I.V.A., Suarez-Ruiz, I., Sýkorová, I., Valentine, B.J., 2015, Standardization of reflectance measurements in dispersed organic matter: results of an exercise to improve interlaboratory agreement. *Marine and Petroleum Geology*, v. 59, p. 22-34, <https://doi.org/10.1016/j.marpetgeo.2014.07.015>.  
 ASTM, 2011, D7708-11 (significantly updated in 2014, now D7708-14) Standard test method for microscopical determination of the reflectance of vitrinite dispersed in sedimentary rocks: Annual book of ASTM standards: Petroleum products, lubricants, and fossil fuels; Gaseous fuels; coal and coke, sec. 5, v. 5.06: ASTM International, West Conshohocken, PA, <http://www.astm.org/Standards/D7708.htm>.

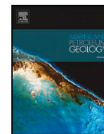
Marine and Petroleum Geology 114 (2020) 104172



Contents lists available at ScienceDirect

Marine and Petroleum Geology

journal homepage: [www.elsevier.com/locate/marpetgeo](http://www.elsevier.com/locate/marpetgeo)



Research paper

Testing reproducibility of vitrinite and solid bitumen reflectance measurements in North American unconventional source-rock reservoir petroleum systems

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THANK YOU FOR THIS GREAT OUTCOME, PAUL!

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## Update from Confocal Laser Scanning Microscopy (CLSM) Working Group, ICCP Commission II

Related to the activities of the CLSM working group, a paper was published in 2020 by WG members on the application of fluorescence spectroscopy via confocal laser scanning microscopy in the *International Journal of Coal Geology* (Hackley et al., 2020). This paper investigated differences in fluorescence emission as a function of excitation wavelength and sample orientation among other topics.

Over the past several years, the CLSM working group members have investigated an immature organic-rich sample of Kimmeridge Clay Formation containing ~44 wt.% total organic carbon, including 2- and 3-D imaging and fluorescence

spectroscopy. The sample was distributed to working group members as whole-rock, kerogen concentrate and strew mounts thanks to the work of João Graciano.

Past and current activities of the CLSM working group are listed on the webpage: <https://www.iccop.org/workinggroup/confocal-laser-scanning-microscopy-clsm>. The working group convenors are meeting regularly via video calls during the global Covid pandemic to discuss new directions and ideas for future working group activities.

Please contact Paul Hackley [phackley@usgs.gov](mailto:phackley@usgs.gov) and Jolanta Kus [jolanta.kus@bgr.de](mailto:jolanta.kus@bgr.de) for any questions or to participate in working group activities.

### References

Hackley, P.C., Jubb, A.M., Burruss, R.C., Beaven, A.E., 2020, Fluorescence spectroscopy of ancient sedimentary organic matter via confocal laser scanning microscopy (CLSM). *International Journal of Coal Geology*, v. 223, Article No. 103445, <https://doi.org/10.1016/j.coal.2020.103445>.