**Zooclast Reflectance Bibliography**

Selected References— Revised April 2021

These bibliographic references have been compiled as a TSOP project, and organic petrologists have found the references to be useful in their work. They should be available at university or geological research center libraries. They are not available from TSOP.

Ardakani, O.H., H. Sanei, D. Lavoie, Z. Chen, and C. Jiang, 2015, Geochemical and petrographic characterization of the Upper Ordovician Utica Shale, southern Quebec, Canada: International Journal of Coal Geology, v. 138, p. 83-94.

Ardakani, O.H., H. Sanei, A. Ghanizadeh, D. Lavoie, Z. Chen, and C.R. Clarkson, 2018, Do all fractions of organic matter contribute equally in shale porosity? A case study from Upper Ordovician Utica Shale, southern Quebec, Canada: Marine and Petroleum Geology, v. 92, p. 794-808.

Belaid, A., B.M. Krooss, and R. Littke, 2010, Thermal history and source rock characterization of a Paleozoic section in the Awbari Trough, Murzuq Basin, SW Libya: Marine and Petroleum Geology, v. 27, p. 612-632.

Bertrand, R., and Y. Heroux, 1987, Chitinozoan, graptolite, and scolecodont reflectance as an alternative to vitrinite and pyrobitumen reflectance in Ordovician and Silurian strata, Anticosti Island, Quebec, Canada: AAPG Bulletin, v. 71, p. 951-957.

Bertrand, R., and A. Achab, 1989, Equivalences between the reflectance of vitrinite, zooclasts (chitinozoans, graptolites and scolecodonts) and the color alteration of palynomorphs (spores and acritarchs): Palynology, v. 13, p. 280.

Bertrand, R., 1990, Correlations among the reflectances of vitrinite, chitinozoans, graptolites and scolecodonts: Organic Geochemistry, v. 15, p. 565-574.

Bertrand, R., 1990, Maturation thermique et histoire de l’enfouissement et de la generation des hydrocarbures du bassin de l’archipel de Mingan et de l’ile d’ Anticosti, Canada: Canadian Journal of Earth Sciences, v. 27, p. 731-741.

Bertrand, R., 1991, Maturation thermique des roches meres dans les bassins des basses-terres du Saint-Laurent et dans quelques buttes temoins au sud-est du bouclier canadien: International Journal of Coal Geology, v. 19, p. 359-383.

 Bertrand, R., 1993, Standardization of solid bitumen reflectance to vitrinite in some Paleozoic sequences of Canada, in F. Goodarzi and R.W. Macqueen, eds., Geochemistry and petrology of bitumen with respect to hydrocarbon generation and mineralization: Energy Sources, v. 15, p. 269-287.

Bertrand, R., and M. Malo, 2001, Source rock analysis, thermal maturation and hydrocarbon generation in the Siluro-Devonian rocks of the Gaspé Belt basin, Canada: Bulletin of Canadian Petroleum Geology, v. 49, p. 238-261. (new calibration of collotelinite, chitinozoans, and solid bitumen)

Bertrand, R., D. Lavoie, and M. Fowler, 2003, Cambrian-Ordovician shales in the Humber zone: thermal maturation and source rock potential: Bulletin of Canadian Petroleum Geology, v. 51, p. 213-233.

Bertrand, R., and M. Malo, 2012, Dispersed organic matter reflectance and thermal maturation in four hydrocarbon exploration wells in the Hudson Bay Basin: regional implications: Geological Survey of Canada, Open File 7066, 52 p. <http://publications.gc.ca/collections/collection_2012/rncan-nrcan/M183-2-7066-eng.pdf>

Buchardt, B., and M.D. Lewan, 1990, Reflectance of vitrinite-like macerals as a thermal maturity index for Cambrian-Ordovician Alum Shale, southern Scandinavia: AAPG Bulletin, v. 74, p. 394-406.

Burden, E.T., S.H. Williams, and P.K. Mukhopadhyay, 1993, Comparative analysis of thermal maturation indices for acritarchs, spores, graptolites and vitrinite from Paleozoic strata, western Newfoundland: GAC/MAC Annual Meeting, Waterloo 93, Programs with Abstracts, p. A-14.

Burne, R.V., and A.J. Kantsler, 1977, Geothermal constraints on the hydrocarbon potential of the Canning Basin, western Australia: BMR Journal of Australian Geology and Geophysics, v. 2, p. 271-288.

Bustin, R.M., C. Link, and F. Goodarzi, 1989, Optical properties and chemistry of graptolite periderm following laboratory simulated maturation: Organic Geochemistry, v. 14, p. 355-364.

Cardott, B.J., and M.A. Kidwai, 1991, Graptolite reflectance as a potential thermal-maturation indicator, in K.S. Johnson, ed., Late Cambrian-Ordovician geology of the southern Midcontinent, 1989 symposium: Oklahoma Geological Survey Circular 92, p. 203-209.

Cheshire, S., P.R. Craddock, G. Xu, B. Sauerer, A.E. Pomerantz, D. McCormick, and W. Abdallah, 2017, Assessing thermal maturity beyond the reaches of vitrinite reflectance and Rock-Eval pyrolysis: A case study from the Silurian Qusaiba formation: International Journal of Coal Geology, v. 180, p. 29-45.

Chi, G., R. Bertrand, and D. Lavoie, 2000, Regional-scale variation of characteristics of hydrocarbon fluid inclusions and thermal conditions along the Paleozoic Laurentian continental margin in eastern Quebec, Canada: Bulletin of Canadian Petroleum Geology, v. 48, p. 193-211.

Clausen, C.-D. and M. Teichmuller, 1982, Die bedeutung der Graptolithenfragmente im Palaozoikum von Soest-Erwitte fur stratigraphie und inkohlung: Fortschritte in der Geologie von Rheinland und Westfalen, v. 30, p. 145-167.

**Cole, G.A., 1994, Graptolite-chitinozoan reflectance and its relationship to other geochemical maturity indicators in the Silurian Qusaiba Shale, Saudi Arabia: Energy and Fuels, v. 8, p. 1443-1459.**

Curiale, J.A., and J.B. Curtis, 2016, Organic geochemical applications to the exploration for source-rock reservoirs – A review: Journal of Unconventional Oil and Gas Resources, v. 13, p. 1-31.

Dewing, K., and M. Obermajer, 2009, Lower Paleozoic thermal maturity and hydrocarbon potential of the Canadian Arctic Archipelago: Bulletin of Canadian Petroleum Geology, v. 57, p. 141-166.

Ertug, K., M. Vecoli, and S. İnan, 2019, Palynofacies, paleoenvironment and thermalmaturity of early Silurian shales in Saudi Arabia (Qusaiba member of Qalibah Formation): Review of Palaeobotany and Palynology, v. 270, p. 8-18. (graptolite reflectance)

Fonseca, C., J.O. Mendonça, J.G. Mendonça Filho, C. Lézin, and L.V. Duarte, 2018, Thermal maturity assessment study of the late Pliensbachian-early Toarcian organic-rich sediments in southern France: Grands Causses, Quercy and Pyrenean basins: Marine and Petroleum Geology, v. 91, p. 338-349.

Gentzis, T., T. de Freitas, F. Goodarzi, M. Melchin, and A. Lenz, 1996, Thermal maturity of lower Paleozoic sedimentary successions in Arctic Canada: AAPG Bulletin, v. 80, p. 1065-1084.

Gentzis, T., H. Carvajal-Ortiz, S.G. Ocubalidet, and B. Wawak, 2017, Organic petrology characteristics of selected shale oil and shale gas reservoirs in the USA: Examples from “The Magnificent Nine”, in I. Suárez-Ruiz, and J.G. Mendonça Filho, eds., The role of organic petrology in the exploration of conventional and unconventional hydrocarbon systems: Sharjah, U.A.E., Bentham Science Publishers, p. 131-168.

Gonçalves, P.A., S. Pinheiro, J.G. Mendonça Filho, J.O. Mendonça, and D. Flores, 2020, Study of a Silurian sequence of Dornes region (central Iberian Zone, Portugal): The contribution of organic petrology and palynofacies: International Journal of Coal Geology, v. 225, 103501. (graptolites)

Goodarzi, F., 1984, Organic petrography of graptolite fragments from Turkey: Marine and Petroleum Geology, v. 1, p. 202-210.

Goodarzi, F., 1984, Chitinous fragments in coal: Fuel, v. 63, p. 1504-1507.

Goodarzi, F., 1985, Reflected light microscopy of chitinozoan fragments: Marine and Petroleum Geology, v. 2, p. 72-78.

Goodarzi, F., 1985, Dispersion of optical properties of graptolite epiderms with increased maturity in early Paleozoic organic-rich sediments: Fuel, v. 64, p. 1735-1740.

Goodarzi, F., and B.S. Norford, 1985, Graptolites as indicators of the temperature histories of rocks: Journal of the Geological Society, London, v. 142, part 6, p. 1089-1099.

Goodarzi, F., L.R. Snowdon, P.R. Gunther, and W.A.M. Jenkins, 1985, Preliminary organic petrography of Palaeozoic rocks from the Grand Banks, Newfoundland: Marine and Petroleum Geology, v. 2, p. 254-259.

Goodarzi, F., and A.C. Higgins, 1987, Optical properties of scolecodonts and their use as indicators of thermal maturity: Marine Petroleum Geology, v. 4, p. 353-359.

Goodarzi, F., and B.S. Norford, 1987, Optical properties of graptolite epiderm -- a review: Bulletin Geol. Soc. Denmark, v. 35, p. 141-147.

Goodarzi, F., and L.D. Stasiuk, 1987, Graptolite preparation for reflected light microscopy -- a technical note, in Current research part A: Geological Survey of Canada Paper 87-1A, p. 317-322.

Goodarzi, F., L.D. Stasiuk, and K. Lindholm, 1988, Graptolite reflectance and thermal maturity of Lower and Middle Ordovician shales from Scania, Sweden: Geologiska Foreningens I Stockholm Forhandlingar, v. 110, part 3, p. 225-236.

Goodarzi, F., and B.S. Norford, 1989, Variation of graptolite reflectance with depth of burial: International Journal of Coal Geology, v. 11, p. 127-141.

Goodarzi, F., P.W. Brooks, and A.F. Embry, 1989, Regional maturity as determined by organic petrography and geochemistry of the Schei Point Group (Triassic) in the western Sverdrup Basin, Canadian Arctic Archipelago: Marine and Petroleum Geology, v. 6, p. 290-302.

Goodarzi, F., 1990, Graptolite reflectance and thermal maturity of lower Paleozoic rocks, in V.F. Nuccio and C.E. Barker, eds., Applications of thermal maturity studies to energy exploration: SEPM, Rocky Mountain Section, p. 19-22.

Goodarzi, F., M.G. Fowler, M. Bustin, and D.M. McKirdy, 1992, Thermal maturity of early Paleozoic sediments as determined by the optical properties of marine-derived organic matter, a review, in M. Schidlowski et al., eds., Early organic evolution: implications for mineral and energy resources: New York, Springer-Verlag, p. 279-295.

Goodarzi, F., T. Gentzis, C. Harrison, and R. Thorsteinsson, 1992, The significance of graptolite reflectance in regional thermal maturity studies, Queen Elizabeth Islands, Arctic Canada: Organic Geochemistry, v. 18, p. 347-357.

Gorter, J.D., 1984, Source potential of the Horn Valley Siltstone, Amadeus basin: APEA Journal, v. 24, part 1, p. 66-90.

Haeri-Ardakani, O., H. Sanei, D. Lavoie, Z. Chen, and C. Jiang, 2015, Geochemical and petrographic characterization of the Upper Ordovician Utica Shale, southern Quebec, Canada: International Journal of Coal Geology, v. 138, p. 83-94.

Hao, J., N. Zhong, Q. Luo, D. Liu, J. Wu, and A. Liu, 2019, Raman spectroscopy of graptolite periderm and its potential as an organic maturity indicator for the Lower Paleozoic in southwestern China: International Journal of Coal Geology, v. 213, 103278.

Hartkopf-Frőder, C., P. Kőnigshof, R. Littke, and J. Schwarzbauer, 2015, Optical thermal maturity parameters and organic geochemical alteration at low grade diagenesis to anchimetamorphism: a review: International Journal of Coal Geology, v. 150-151, p. 74-119.

Héroux, Y., and R. Bertrand, 1991, Maturation thermique de la matiere organique dans un bassin du Paleozoique inferieur, basses-terres du Saint-Laurent, Quebec, Canada: Canadian Journal of Earth Sciences, v. 28, p. 1019-1030.

Héroux, Y., A. Chagnon, and M. Savard, 1996, Organic matter and clay anomalies associated with base-metal sulfide deposits: Ore Geology Reviews, v. 11, p. 157-173.

Hower, J.C., and M.L. Malinconico, 2000, Organic metamorphism in Middle Ordovician carbonates, Lebanon Valley nappe, Pennsylvania: International Journal of Coal Geology, v. 42, p. 221-230.

İnan, S., F. Goodarzi, A. Schmidt Mumm, K. Arouri, S. Qathami, O.H. Ardakani, T. İnan, and A.A. Tuwailib, 2016, The Silurian Qusaiba hot shales of Saudi Arabia: An integrated assessment of thermal maturity: International Journal of Coal Geology, v. 159, p. 107-119. (graptolite reflectance)

Jackson, K.S., D.M. McKirdy, and J.A. Deckelman, 1984, Hydrocarbon generation in the Amadeus basin, central Australia: APEA Journal, v. 24, part 1, p. 42-65.

Ji, W., F. Hao, Y. Song, J. Tian, M. Meng, and H. Huang, 2020, Organic geochemical and mineralogical characterization of the lower Silurian Longmaxi shale in the southeastern Chongqing area of China: Implications for organic matter accumulation: International Journal of Coal Geology, v. 220, 103412. (graptolite)

Jiang, C., S. Zhang, and J. Reyes, 2019, Black shale xenolith in a Jurassic-Cretaceous kimberlite and organic-rich Upper Ordovician shale on Baffin Island, Canada: A comparison of their organic matter: Marine and Petroleum Geology, v. 103, p. 202-215.

Kemp, A.E.S., G.H.J. Oliver, and J.R. Baldwin, 1985, Low-grade metamorphism and accretion tectonics: southern uplands terrain, Scotland: Mineralogical Magazine, v. 49, p. 335-344.

Kurylowicz, L.E., S. Ozimic, D.M. McKirdy, A.J. Kantsler, and A.C. Cook, 1976, Reservoir and source rock potential of the Larapinta Group, Amadeus basin, central Australia: APEA Journal, v. 16, part 1, p. 49-65.

Legall, F.D., C.R. Barnes, and R.W. MacQueen, 1981, Thermal maturation, burial history and hotspot development of Paleozoic strata of southern Ontario – Quebec, from conodont and acritarch colour alteration studies: Bulletin of Canadian Petroleum Geology, v. 29, p. 492-539. (proposed acritarch alteration index, AAI)

Link, C.M., 1988, Organic maturation and petroleum source potential of Phanerozoic strata in northern Yukon and northwestern District of Mackenzie: Vancouver, University of British Columbia, unpublished M.S. thesis, 273 p.

Link, C.M., R.M. Bustin, and F. Goodarzi, 1990, Petrology of graptolites and their utility as indices of thermal maturity in lower Paleozoic strata in northern Yukon, Canada: International Journal of Coal Geology, v. 15, p. 113-135.

Liu, D., 1995, A study on composition and structure of graptolites using MICRO-FTIR and TOF-SIMS: Scientia Geologica Sinica, v. 4, no. 1, p. 105-110.

Luo, G., N. Zhong, N. Dai, and W. Zhang, 2016, Graptolite-derived organic matter in the Wufeng-Longmaxi Formations (Upper Ordovician–Lower Silurian) of southeastern Chongqing, China: Implications for gas shale evaluation: International Journal of Coal Geology, v. 153, p. 87-98.

Luo, Q., J. Hao, C.B. Skovsted, P. Luo, I. Khan, J. Wu, and N. Zhong, 2017, The organic petrology of graptolites and maturity assessment of the Wufeng-Longmaxi Formations from Chongqing, China: Insights from reflectance cross-plot analysis: International Journal of Coal Geology, v. 183, p. 161-173.

Luo, Q., J. Hao, C.B. Skovsted, Y. Xu, Y. Liu, J. Wu, S. Zhang, and W. Wang, 2018, Optical characteristics of graptolite-bearing sediments and its implication for thermal maturity assessment: International Journal of Coal Geology, v. 195, p. 386-401.

**Luo, Q., F. Goodarzi, Z. Ningning, W. Ye, Q. Nansheng, C.B. Skovsted, V. Suchý, N.H. Schovsbo, R. Morga, Y. Xu, J. Hao, A. Liu, J. Wu, W. Cao, X. Min, and J. Wu, 2020, Graptolites as fossil geo-thermometers and source material of hydrocarbons: An overview of four decades of progress: Earth-Science Reviews, v. 200, 103000.**

Ma, Y., N. Zhong, L. Cheng, Z. Pan, N. Dai, Y. Zhang, and L. Yang, 2016, Pore structure of the graptolite-derived OM in the Longmaxi Shale, southeastern Upper Yangtze region, China: Marine and Petroleum Geology, v. 72, p. 1-11.

Malinconico, M.A.L., 1992, Graptolite reflectance in the prehnite-pumpellyite zone of northern Maine, U.S.A.: Organic Geochemistry, v. 18, p. 263-271.

Malinconico, M.A.L., 1993, Reflectance cross-plot analysis of graptolites from the anchi-metamorphic region of northern Maine, U.S.A.: Organic Geochemistry, v. 20, p. 197-207.

Marshall, J.E.A., 1990, Determination of thermal maturity, in D.E.G. Briggs and P.R. Crowther, eds., Palaeobiology, a synthesis: Boston, Blackwell Scientific Publications, p. 511-515.

Marshall, J.E.A., 1995, The Silurian of Saudi Arabia: thermal maturity, burial history and geotectonic environment: Review of Palaeobotany and Palynology, v. 89, p. 139-150.

Morga, R., and M. Pawlyta, 2018, Microstructure of graptolite periderm in Silurian gas shales of northern Poland: International Journal of Coal Geology, v. 189, p. 1-7.

Morga, R., and M. Kamińska, 2018, The chemical composition of graptolite periderm in the gas shales from the Baltic Basin of Poland: International Journal of Coal Geology, v. 199, p. 10-18.

Mumm, A.S., and S. İnan, 2016, Microscale organic maturity determination of graptolites using Raman spectroscopy: International Journal of Coal Geology, v. 162, p. 96-107.

Obermajer, M., M.G. Fowler, F. Goodarzi, and L.R. Snowdon, 1996, Assessing thermal maturity of Palaeozoic rocks from reflectance of chitinozoa as constrained by geochemical indicators: an example from southern Ontario, Canada: Marine and Petroleum Geology, v. 13, p. 907-919.

Obermajer, M., L.D. Stasiuk, M.G. Fowler, and K.G. Osadetz, 1999, Application of acritarch fluorescence in thermal maturity studies: International Journal of Coal Geology, v. 39, p. 185-204.

Obermajer, M., M.G. Fowler, and L.R. Snowdon, 1999, Depositional environment and oil generation in Ordovician source rocks from southwestern Ontario, Canada: organic geochemical and petrological approach: AAPG Bulletin, v. 83, p. 1426-1453.

Oliver, G.J.H., 1988, Arenig to Wenlock regional metamorphism in the paratectonic Caledonides of the British Isles: a review, in A.L. Harris and D.J. Fettes, eds., The Caledonian-Appalachian Orogen: London, The Geological Society, Special Publication 38, Blackwell Scientific Publications, p. 347-363.

Parnell, J., 1989, Hydrocarbon potential of lower Paleozoic of the British Isles: Oil & Gas Journal, v. 87, no. 32, p. 82-86.

**Petersen, H.I., N.H. Schovsbo, and A.T. Nielsen, 2013, Reflectance measurements of zooclasts and solid bitumen in Lower Paleozoic shales southern Scandinavia: Correlation to vitrinite reflectance: International Journal of Coal Geology, v. 114, p. 1-18. (graptolite reflectance)**

Poulton, T.P., 1989, Fossils: thermal maturation indicators, northwestern mainland Canada, in Current research Part G: Geological Survey of Canada Paper 89-1G, p. 23-24.

Qiu, Z., C. Zou, X. Li, H. Wang, D. Dong, B. Lu, S. Zhou, Z. Shi, Z. Feng, and M. Zhang, 2018, Discussion on the contribution of graptolite to organic enrichment and gas shale reservoir: A case study of the Wufeng-Longmaxi shales in South China: Journal of Natural Gas Geoscience, v. 3, p. 147-156.

Rantitsch, G., 1995, Coalification and graphitization of graptolites in the anchizone and lower epizone: International Journal of Coal Geology, v. 27, p. 1-22.

Repetski, J.E., R.T. Ryder, D.J. Weary, A.G. Harrris, and M.H. Trippi, 2008, Thermal maturity patterns (CAI and %Ro) in Upper Ordovician and Devonian rocks of the Appalachian Basin: a major revision of USGS Map I-917-E using new subsurface collections: U.S. Geological Survey Scientific Investigations Map 3006, one CD-ROM. <http://pubs.usgs.gov/sim/3006/>

Reyes, J., C. Jiang, D. Lavoie, D.K. Armstrong, M. Milovic, and R. Robinson, 2018, Organic petrographic analysis of artificially matured chitinozoan- and graptolite-rich Upper Ordovician shale from Hudson Bay Basin, Canada: International Journal of Coal Geology, v. 199, p. 138-151.

Riediger, C., F. Goodarzi, and R.W. Macqueen, 1989, Graptolites as indicators of regional maturity in lower Paleozoic sediments, Selwyn basin, Yukon and Northwest Territories, Canada: Canadian Journal of Earth Sciences, v. 26, p. 2003-2015.

Řimnáčová, D., Z. Weishauptová, O. Přibl, I. Sýkorová, and M. René, 2020, Effect of shale properties on CH4 and CO2 sorption capacity in Czech Silurian shales: Journal of Natural Gas Science and Engineering, v. 80, 103377. (graptolites)

Roberts, S., P.M. Tricker, and J.E.A. Marshall, 1995, Raman spectroscopy of chitinozoans as a maturation indicator: Organic Geochemistry, v. 23, p. 223-228.

Ruble, T.E., W.R. Knowles, S.D. Ely, and A.S. Wylie, 2017, Assessing thermal maturity in Cambrian source rocks, Rome Trough, Appalachian Basin: Organic petrology complexities: AAPG Search and Discovery Article 10903, 28 p. <http://www.searchanddiscovery.com/pdfz/documents/2017/10903ruble/ndx_ruble.pdf.html>

Schmidt, J.S., C.V. Araujo, I.V.A.F. Souza, and R.B.A. Chagas, 2015, Hydrous pyrolysis maturation of vitrinite-like and humic vitrinite macerals: Implications for thermal maturity analysis: International Journal of Coal Geology, v. 144-145, p. 5-14.

Sikander, A.H., and J.L. Pittion, 1978, Reflectance studies on organic matter in lower Paleozoic sediments of Quebec: Bulletin of Canadian Petroleum Geology, v. 26, p. 132-151.

Suchý, V., I. Sýkorová, M. Stejskal, J. Šafanda, V. Machovič, and M. Novotná, 2002, Dispersed organic matter from Silurian shales of the Barrandian Basin, Czech Republic: optical properties, chemical composition and thermal maturity: International Journal of Coal Geology, v. 53, p. 1-25.

Suchý, V., A. Sandler, M. Slobodník, I. Sýkorová, J. Filip, K. Melka, and A. Zeman, 2015, Diagenesis to very low-grade metamorphism in lower Palaeozoic sediments: A case study from deep borehole Tobolka 1, the Barrandian Basin, Czech Republic: International Journal of Coal Geology, v. 140, p. 41-62. (graptolite; chitinozoan)

Sýkorová, I., V. Suchý, V. Melka, J. Šafanda, V. Machovič, and P. Dobeš, 2000, Petrology and chemistry of organic matter from Silurian shales in the Barrandian basin (abstract): TSOP Abstracts and Program, v. 17, p. 94-96.

Synnott, D.P., K. Dewing, O.H. Ardakani, and M. Obermajer, 2018, Correlation of zooclast reflectance with Rock-Eval Tmax values within Upper Ordovician Cape Phillips Formation, a potential petroleum source rock from the Canadian Arctic Islands: Fuel, v. 227, p. 165-176.

Teichmuller, M., 1978, Nachweis von Graptolithen -- periderm in geschieferten gesteinen mit hilfe kohlenpetrologischer methoden: Neues Jahrbuch fur Geologie und Palaeontologie, Monatschefte, 1978, no. 7, p. 430-447.

Teichmuller, M., 1986, Organic petrology of source rocks, history and state of the art: Organic Geochemistry, v. 10, p. 581-599.

Teichmuller, M., and R. Teichmuller, 1981, The significance of coalification studies to geology -- a review: Bulletin Des Centres De Recherchese Exploration-Production Elf Aquitaine, v. 5, p. 491-534.

Teichmuller, M., and R. Teichmuller, 1982, Das inkohlungsbild des lippstadter gewolbes: Fortschritte in der Geologie von Rheinland und Westfalen, v. 30, p. 223-239.

Tricker, P.M., 1992, Chitinozoan reflectance in the Lower Paleozoic of the Welsh basin: Terra Nova, v. 4, p. 231-237.

Tricker, P.M., J.E.A. Marshall, and T.D. Badman, 1992, Chitinozoan reflectance: a lower Palaeozoic thermal maturity indicator: Marine and Petroleum Geology, v. 9, p. 302-307.

Varol, Ö.N., I.H. Demirel, R.B. Rickards, and Y. Günay, 2006, Source rock characteristics and biostratigraphy of the Lower Silurian (Telychian) organic-rich shales at Akyaka, central Taurus region, Turkey: Marine and Petroleum Geology, v. 23, p. 901-911.

Voldman, G.G., R.A. Bustos-Marún, and G.L. Albanesi, 2010, Calculation of the conodont Color Alteration Index (CAI) for complex thermal histories: International Journal of Coal Geology, v. 82, p. 45-50.

Watson, S.W., 1976, The sedimentary geochemistry of the Moffat shales: a carbonaceous sequence in the southern uplands of Scotland: Fife, University of St. Andrews, unpublished PhD thesis.

Williams, S.H., E.T. Burden, and P.K. Mukhopadhyay, 1998, Thermal maturity and burial history of Paleozoic rocks in western Newfoundland: Canadian Journal of Earth Science, v. 35, p. 1307-1322. (graptolite reflectance)

Xianming, X., R.W.T. Wilkins, L. Dehan, L. Zufa, and F. Jiamu, 2000, Investigation of thermal maturity of lower Palaeozoic hydrocarbon source rocks by means of vitrinite-like maceral reflectance — a Tarim basin case study: Organic Geochemistry, v. 31, no. 10, p. 1041-1052.

Xiao, X.M., R.W.T. Wilkins, D.H. Liu, Z.F. Liu, and J.M. Fu, 2000, Investigation of thermal maturity of lower Paleozoic hydrocarbon source rocks by means of vitrinite-like maceral reflectance: A Tarim Basin case study: Organic Geochemistry, v. 31, p. 1041-1052.

Xiaofeng, W., A. Hoffknecht, X. Jianxin, L. Zehong, C. Shanqin, R. Brocke, and B.D. Erdtmann, 1992, Reflectance of graptolite and its use as indicator of thermal maturity: Bulletin of the Yichang Institute of Geology and Mineral Resources, v. 18, p. 89-92.

Xiaofeng, W., A. Hoffknecht, X. Jianxin, C. Shanqin, L. Zehong, R. Brocke, and B.D. Erdtmann, 1993, Thermal maturity of the Sinian and early Paleozoic in west Hubei, China, assessed by CAI, reflectance and geochemical studies: Stratigraphy and Paleontology of China, v. 2, p. 19-44.

Xiaofeng, W., B.-D. Erdtmann, A. Hoffknecht, C. Shanqin, C. Xiaohong, L. Zhihong, X. Jianxin, and R. Brocke, 1997, Bioclast reflectance—a new frontier of organic petrology: Beijing, China, Geological Publishing House, 80 p.

Yang, C., and R. Hesse, 1993, Diagenesis and anchimetamorphism in an overthrust belt, external domain of the Taconian Orogen, southern Canadian Appalachians -- II. Paleogeothermal gradients derived from maturation of different types of organic matter: Organic Geochemistry, v. 20, p. 381-403.

Zdanaviciute, O., and J. Lazauskiene, 2009, Organic matter of Early Silurian succession – the potential source of unconventional gas in the Baltic Basin (Lithuanian): Baltica, v. 22, p. 89-99.

Zhao, J., Z. Jin, Z. Jin, Q. Hu, Z. Hu, W. Du, C. Yan, and Y. Geng, 2017, Mineral types and organic matters of the Ordovician-Silurian Wufeng and Longmaxi Shale in the Sichuan Basin, China: Implications for pore systems, diagenetic pathways, and reservoir quality in fine-grained sedimentary rocks: Marine and Petroleum Geology, v. 86, p. 655-674. (graptolite reflectance)

Zhu, G., F. Chen, M. Wang, Z. Zhang, R. Ren, and L. Wu, 2018, Discovery of the lower Cambrian high-quality source rocks and deep oil and gas exploration potential in the Tarim Basin, China: AAPG Bulletin, v. 102, p. 2123-2151. (vitrinite like macerals from benthic algae)