

Please accept the following package in support of Dr. Prasanta Mukhopadhyay for the Gesner Medal awarded by the Atlantic Geoscience Society.

- Nomination Letter - Dr. Marcos Zentilli: Professor Emeritus, Dalhousie University
- Seconder - Dr. Grant Wach: Professor, Dalhousie University
- Supporting Letters
 - Dr. Tom Martel: AGS Past President 2001
 - John Hogg: President Skybattle Resources Ltd., AAPG Past President, CSPG Past President
 - Dr. Martin Fowler: Senior Geochemist and Director, APT Canada Ltd.
 - Dr. Martin Gibling: Professor Emeritus, Dalhousie University
 - Dr. Nick Wilson: Technical Advisor, Geoscience, Gran Terra Energy
 - Dr. Todd Ventura: Associate Professor and Canadian Research Chair, Saint Mary's University
 - Dr. Michael Enachescu: Ex-Husky Senior Fellow, Memorial University, Associate and Adjunct Professor
 - David Brown: Former Senior Advisor Geology, CNSOPB
- Publications
- CV

Professors Marcos Zentilli and Grant Wach

To:
AGS Awards Evaluation Committee
Distinguished Scientist Award (Gesner Medal) 2023

From: Professors Marcos Zentilli and Grant Wach

Re. Nomination of Dr. Prasanta K Mukhopadhyay for the Gesner medal

I (Zentilli) first got to know Dr. Prasanta K. Mukhopadhyay (Dr. Muki) in his very impressive Short Course on organic geochemistry and petroleum generation at Dalhousie University with renowned Prof. D. H. Welte from Aachen, Germany, where Dr. Muki had completed a Humboldt Fellowship in 1975-1976. Dr. Muki had worked as an organic geochemist for 10 years, including the Institute of Petroleum Geochemistry, Jülich, Germany, the Texas Bureau of Economic Geology, the Geofuel Research Institute, Sydney, Nova Scotia, and his own company Global Geoenergy Research in Halifax, and they brought the latest developments into this innovative research. Although coal petrology and vitrinite reflectance (VR) had been introduced to us by Dr. P. Hacquebard (GSC Atlantic), this course opened a new phase for many in petroleum geoscience. It was amazing that, combined with pyrolysis and other techniques, with a simple microscope and a specialized photometer, VR under oil immersion oil (R_o) on a sample of polished coal maceral (from fossil wood in the sedimentary strata), one could determine whether a source rock could have generated petroleum, only natural gas or was overmature and thus infertile: data of enormous importance for costly and risky petroleum exploration. R_o is a function of temperature and time, thus valuable in the quantitative time-temperature modelling of basins within a temperature range of 60 to 120°C. This temperature range, derived from VR provided us with an independent means of calibration in the development of the apatite fission track (AFT) in my lab (Zentilli) at Dalhousie. Today the VR technique has worldwide application.



Although fully occupied as a consultant for industry, Dr. Muki, a compulsive educator, became a volunteer adjunct professor at Dalhousie. I recall his enthusiasm for convincing us of the complex details and importance of the VR technique and of organic geochemistry; always ready to help and remarkably

humble, he volunteered many hours reviewing and serving on supervisory thesis committees for our students, influencing many along their careers.

His publication list is very impressive, although the bulk of his professional work was never published and as John Hogg, former president of the AAPG writes: *"...remain in the confidential files of energy company offices in Calgary, Houston, London, and Perth"*. Dr. Tom Martel, former AGS president (2001) and former Chief Geologist of Corridor Resources writes *"Understanding hydrocarbon systems (e.g., organic macerals, hydrocarbon maturation, generation, and expulsion) is critical for the success of any exploration program. Dr. Muki built our (and many others) foundation for exploration. These areas include the Lower Carboniferous in the onshore basins of New Brunswick and Nova Scotia; the Upper Carboniferous in the offshore Gulf of St. Lawrence and onshore Nova Scotia; the Cretaceous of the Scotia Shelf basins; and the Ordovician of the Quebec Lowlands and Anticosti Island. Many of these basins had little (or no) valid organic analyses before that of Dr. Muki. His work was crucial to helping our company farm properties to some of the world's largest petroleum companies. The result was hundreds of millions of dollars spent in Atlantic Canada and a successful business that still operates today."*

A major contribution of Dr. Muki has been contributing to the understanding of the geochemistry of the Scotian Basin. A measure of the respect his peers have for him is evident in the published literature: with over 65 articles and chapters in various journals and books, many with co-authors from Atlantic Canada. Google Scholar indicates more than 1300 citations of Dr. Muki's articles. The legacy and "multiplying effect" of his work has been manifested through the many short courses for energy companies and professional organizations in Brazil, Canada, China, India, Japan, US and Venezuela, and his input into textbooks. He has presented more than 300 oral and poster presentations at professional scientific society meetings (many in the Atlantic Provinces). One of his most didactic papers is: "Vitrinite reflectance as maturity parameter: petrographic and molecular characterization and its applications to basin modeling" (*In: Mukhopadhyay, P. K., Dow, W. G. (Eds.), American Chemical Society (ACS) Symposium Series, 570, pp.1–25, 1994*), one of four books he edited for ACS and Elsevier Science Publications. In 2011 he received the Lifetime Achievement Award - Honorary Membership Award by The Society for Organic Petrology, in Washington D.C. USA. He was Associate Editor of the AAPG Bulletin, the top journal in the energy sector, for

many years. Recognized as an expert, he was invited to participate in discussions about the geochemistry and origin of carbon in the Solar System.

In summary, Dr. Muki has been an influential educator and contributor to our understanding of coal and petroleum basins, particularly in Atlantic Canada. This has led to our fundamental understanding of the elements of a petroleum system that are key for the current efforts to use these same basins for Carbon Storage. Without this fundamental knowledge of the interaction of the elements in these basins or current efforts could not proceed. His remarkable knowledge on all aspects of organic geochemistry and its applications to geology, industry and society makes him a very worthy recipient of the Distinguished Scientist Award (Gesner Medal) for AGS in 2023. Abraham Gesner would be proud to know that AGS bestows his named medal to another pioneer in the organic geochemistry of Eastern Canada.

Profs. Marcos Zentilli and Grant Wach

Halifax, NS.

January 7th, 2023

January 7th, 2023

To the Committee,

**Re: Dr. Prasanta K. Mukhopadhyay
Nomination for the AGS Abraham Gesner Medal**

I am delighted and honoured to second the nomination for Dr. Prasanta K. Mukhopadhyay (Muki) to receive the Atlantic Geoscience Gesner Medal. It was humbling to read through the letters of support for Muki that came to us from across Canada. I have known Muki and his research for over two decades but the insights from his peers and colleagues were remarkable.

Dr. Michael Enachescu past Husky Fellow and Professor at Memorial University and renowned exploration geoscientist on the Atlantic Margin, Western Canada and the Arctic noted in his letter of support that Muki *“is a geochemist of high repute and passionate researcher, known worldwide his work on coal petrography, organic matter in sediments, petroleum source rocks, environmental geochemistry, shale oil resources, basin modeling, gas hydrates and the relationship between structural setting and source rock maturation”* as *“well as seminal work on environmental geoscience”*. His *“research is applied across geological eras, in many continental settings, in various age basins and even in interplanetary settings!”*. *“Research collaboration with leading Canadian geoscientists from the GSC Atlantic (BIO), Maritime/Atlantic Universities and Government of Nova Scotia has resulted in seminal publications that vastly helped the Oil and Gas Industry professionals and resulted in new discoveries or in understanding the petroleum potential of the Atlantic sedimentary basins. He also had vast contributions to major world science research projects such as DSDP, ODP, IODP and helped with the understanding of the petroleum systems of Western Canada Sedimentary Basin”*.

David Brown former senior advisor to the Canada Nova Scotia Offshore Petroleum Board echoed these comments and wrote that *“Muki’s worked in many regions of the world and in basins of varying geologic ages and is acknowledged by his peers as an authority in organic geochemistry (petroleum and environmental), petroleum systems and basin modelling, coal petrology, carbon sequestration, and gas hydrates. Beyond our planet he has research and published on astrobiology as related to carbonaceous chondritic meteorites and comet dust, and evidence of gas hydrates on Mars.”*

Former AGS president Dr. Tom Martel and retired Chief Geologist of Corridor Resources described *“Muki’s work understanding hydrocarbon systems (e.g., organic macerals, hydrocarbon maturation, generation, and expulsion) as critical for the success of any exploration program. Dr. Muki built our (and many others) foundation for exploration. These areas include the Lower Carboniferous in the onshore basins of New Brunswick and Nova Scotia; the Upper Carboniferous in the offshore Gulf of St. Lawrence and onshore Nova Scotia; the Cretaceous of the Scotia Shelf basins; and the Ordovician of the Quebec Lowlands and Anticosti Island. Martel notes that many of these basins had little (or no) valid organic analyses before that of Dr. Muki. His work was crucial to helping our company farm properties to some of the world’s largest petroleum companies. The result was hundreds of millions of dollars spent in Atlantic Canada and a successful business that still operates today.”*

Basin

*Professor Grant Wach, D.Phil. FGS, P.Geo.
Faculty of Science- Earth & Environmental Sciences*

John Hogg past president of the AAPG and former Vice President of Atlantic Canada Exploration for PanCanadian, EnCana and ConocoPhillips Canada observed, *“Dr. Muki is the glue that bound the geochemistry community together for offshore exploration in Nova Scotia. He not only completed confidential projects for many of the leading companies exploring in Nova Scotia for more than three decades, but he also promoted the offshore opportunities worldwide and enhanced the knowledge base of hundreds of geoscientists with his understanding of the Scotian margin, with both peer reviewed technical papers and countless talks at conferences”.*

Muki is a passionate educator, as an Adjunct at Dalhousie University he was very involved with mentoring and supervising students as the support letter from Dr. Nick Wilson attests. As Dave Brown recollects, *“Muki was an early proponent of encouraging scientific cooperation and technical meetings towards understanding the Nova Scotia and Moroccan conjugate margins that is vital to improving their prospectivity and encouraging exploration. To that end he organized and chaired the Nova Scotia session at the first Moroccan Association of Petroleum Geologists meeting in 2007. This was a precursor to the successful Conjugate Margins Conferences held biennially since 2008 in countries bordering the Atlantic realm. He has found time to act as a reviewer and editor for several peer-reviewed technical journals and publications. Locally, he organized and was chairman of two very successful Society of Organic Petrologists (TSOP) meetings in Halifax (1998 and 2011) and participated actively in many other TSOP meetings through presentations on Atlantic Canada geology and geochemistry. Muki was also active as an organizer and presenter in the Maritime Energy Association CORE conferences Technical Seminars throughout the 1990s and 2000s sponsored by the Halifax chapter of the Petroleum Society of the CIMM.”*

Dr. Prasanta Mukhopadhyay is an exceptional nominee for the Abraham Gesner Medal criteria, *“awarded to a person who has ... developed and promoted the advancement of geoscience in the Atlantic region in any field of geology. The contribution of the person should be of large enough scope to have made an impact beyond the immediate Atlantic region”.* In closing, as Dr. Tom Martel remarked, *“I cannot think of anyone more deserving of a medal named after the founding father of petroleum geochemistry. Similar to Abraham Gesner, Dr. Muki is a pioneer in the organic geochemistry of Eastern Canada. He has even studied the same rocks that Gesner used to distill kerosene!”*

Sincerely,



Professor Grant Wach, DPhil, FGS, P.Geo.
Department of Earth and Environmental Sciences
Dalhousie University, Halifax, Canada

Basin

*& Reservoir Lab, Department of Earth and Environmental Sciences, Dalhousie University
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<https://www.dal.ca/sites/sustainable-energy.html>

Tom Martel

Halifax, January 7th, 2023

Dr. PK Mukhopadhyay

It is my great honour to support Dr. P.K. Mukhopadhyay (Dr. Muki) for the Gesner medal. Dr. Muki is the preeminent hydrocarbon and coal organic geochemist in Eastern Canada. During my twenty-five years as the Chief Geologist for Corridor Resources, I worked closely with Dr. Muki to understand the nature of the hydrocarbon systems of Atlantic Canada.

Understanding hydrocarbon systems (e.g., organic macerals, hydrocarbon maturation, generation, and expulsion) is critical for the success of any exploration program. Dr. Muki built our (and many others) foundation for exploration. These areas include the Lower Carboniferous in the onshore basins of New Brunswick and Nova Scotia; the Upper Carboniferous in the offshore Gulf of St. Lawrence and onshore Nova Scotia; the Cretaceous of the Scotia Shelf basins; and the Ordovician of the Quebec Lowlands and Anticosti Island.

Many of these basins had little (or no) valid organic analyses before that of Dr. Muki. His work was crucial to helping our company farm properties to some of the world's largest petroleum companies. The result was hundreds of millions of dollars spent in Atlantic Canada and a successful business that still operates today.

Dr. Muki's knowledge is immense, and there was never a question of using anyone else for this work. Dr. Muki has also made a great effort to share his knowledge and findings with the scientific community. I have attended many of his presentations at academic and industry conferences.

In summary, I cannot think of anyone more deserving of a medal named after the founding father of petroleum geochemistry. Similar to Abraham Gesner, Dr. Muki is a pioneer in the organic geochemistry of Eastern Canada. He has even studied the same rocks that Gesner used to distill kerosene!

Sincerely,

Tom Martel, PhD
AGS Past President 2001

John Hogg, P.Geo
President
Skybattle Resources Ltd
9256 Oakmount Drive SW
Calgary Alberta T2V 4X9
January 6, 2023

Dr. Grant Wach
Dalhousie University
Halifax, Nova Scotia

Dear Grant:

Thank-you for the opportunity to write a letter in support of Dr. P.K Mukhopadhyay (Muki) in support of his nomination for the AGS Gesner Medal.

I've known Muki for over thirty years when I was an exploration geologist, exploration manager, and Vice President of Atlantic Canada Exploration for PanCanadian, EnCana and ConocoPhillips Canada. Over my career I've believe that Dr. Muki is the glue that bound the geochemistry community together for offshore exploration in Nova Scotia. He not only completed confidential projects for many of the leading companies exploring in Nova Scotia for more than three decades, but he also promoted the offshore opportunities worldwide and enhanced the knowledge base of hundreds of geoscientists with his understanding of the Scotian margin, with both peer reviewed technical papers and countless talks at conferences.

Dr. Muki's hunger for understanding the petroleum systems in Nova Scotia was always forefront in many nights of discussions with the local geological community and industry geoscientists who would be in Halifax, or an out-of-town conference.

There are many studies that Muki undertook for Industry, that remain in the confidential report files in Energy Companies offices in Calgary, Houston, London, and Perth, Muki was a valuable contributor to the understand of the geochemistry of the Scotian Basin.

Eager, passionate, competent, and friendly, are all the terms that come to mind when I think of my friend Muki.

I wish the committee well in its deliberations, awards are always wonderful to receive, and difficult for the committee to select the winner, with Dr. Mukhopadhyay he is a known commodity in the Petroleum Geoscience Community in most of the world, he would be a wonderful choice by AGS for the Gesner Medal.

Sincerely,

JR Hogg

*John Hogg, P. Geo
President,
Skybattle Resources Ltd.
Past President American Association of Petroleum Geologists
Past President Canadian Society of Petroleum Geologists*

January 7th, 2023

Applied Petroleum Technology Canada Ltd.

5227 Carney Road N.W.,
Calgary, Alberta T2L 1G1
Canada Phone 403-681-7038

To whom it may concern:

This letter is in support of Dr. Prasanta Mukhopadhyay O('Muki') receiving the Gesner Medal.

I have known Muki for about forty years, and worked with him on some Atlantic Canada petroleum geology/geochemistry projects when I was a petroleum geochemist at the Geological Survey of Canada (GSC) in the 1990's.

Muki was at the forefront in the development of organic petrography, the microscopical study of the organic constituents of rocks. In doing this, he was responsible for significant advances to our knowledge of petroleum source rocks by examining the variations in organic matter input and how different organic macerals evolve with increasing thermal maturity. In particular, he documented changes in the properties of vitrinite with increasing maturation, important as vitrinite reflectance is the standard thermal maturity parameter. This led to studies on the regional maturity of sedimentary basins and what this suggests about their evolution. He is also investigated the nature of coals and devised methods to assess their potential to be a source of economic accumulations of hydrocarbons, using a combination of optical and pyrolysis techniques. He has also employed his organic petrological skills to environmental and planetary science applications.

A lot of this work was directed in furthering the understanding of the petroleum geology of Atlantic Canada, and in particular offshore and onshore Nova Scotia. Muki provided a lot of the framework that encouraged companies to continue to explore in this frontier area that might otherwise have got overlooked. He was an enthusiastic promoter of the opportunities for oil and gas exploration in Atlantic Canada at conferences and meetings throughout the world.

Muki has also been a keen popularizer of his science, either through his adjunct duties at Dalhousie, his many presentations and short courses, and his volunteer work with many organizations, notably the American Association of Petroleum Geologists (AAPG). He also found the time to be an Associate Editor of the AAPG Bulletin, and of a number of books and special journal volumes, including one with me on Coal as Petroleum Source Rock that was published in Organic Geochemistry and was based on an America Chemical Society Symposium that we co-organized that was extremely successful.

MARTIN FOWLER, Senior Geochemist and Director, APT Canada Ltd

Selection Committee, Gesner Medal
Atlantic Geoscience Society
7 January, 2023

Dear Members of the Selection Committee,

I am writing to express my support for the nomination of **Dr. P.K. Mukhopadhyay (Dr. Muki)** for the Gesner Medal of the Atlantic Geoscience Society. In accord with the guidelines for the medal, Dr. Muki has made an important long-term contribution to the geological knowledge of Atlantic Canada, with impacts on geoscience beyond the region, and he has also made many significant contributions to geology in other parts of the world. He would be an eminently worthy recipient of the award.

Dr. Muki is a geochemist with expertise in a wide range of organic resources and contaminants. His expertise arises from his work as a consultant, but his contribution has extended far beyond official reports, making him internationally known for his knowledge of organic geological systems. Unusually for someone in the demanding world of consulting, Dr. Muki has found time to write peer-reviewed papers, book chapters, and reports that have been highly influential, including overviews of coal petrology and methods in vitrinite reflectance. A hallmark of his research has always been his skill with technical analysis using a range of techniques, making him a reliable “go-to” person for studies in organic components.

In Atlantic Canada, Dr. Muki has made a seminal contribution over decades towards source-rock analysis of hydrocarbon systems in the Scotian Basin and Grand Banks, with links to halokinesis and hydrocarbon migration pathways from the deepwater basin. However, I first knew Dr. Muki in the context of coal analysis, through a 1991 co-authored paper with John Calder on Cumberland Basin coals. Dr. Muki has worked on coal, coal-bed methane, and hydrocarbon potential in coalfields across Atlantic Canada and on the potential for shale-gas resources within the Horton Group. This body of research has brought organic systems onshore and offshore Atlantic Canada to worldwide attention. Additionally, Dr. Muki’s enthusiasm has involved contributions to many students in the region as Adjunct Professor at Dalhousie University.

Outside the Atlantic region, Dr. Muki has also made major contributions to hydrocarbon systems in Western and Arctic Canada, to practical problems associated with oil production and transmission, and to unconventional shale-gas resources across North America. His broader interests are reflected in contributions to knowledge of petroleum systems linked to ore deposits in South America, to the Ocean Drilling Program, and to gas hydrates off Japan. His research on Tertiary coals in the Texas Gulf Coast is well

known, and I also worked with him on the maturation of Jurassic source rocks in the Himalaya. A special body of work has focused on organic bottom sediments and contaminants in Halifax Harbour and Lake Ontario. He has also studied organic matter in meteorites and hydrocarbon systems elsewhere in the Solar System.

In 2011, Dr. Muki received the Lifetime Achievement Award for The Society of Organic Petrology – a highly meritorious award. He has made a long-term contribution to the AAPG Bulletin as an Associate Editor, for which he was made a Charles Taylor Fellow. In summary, Dr. Muki's research has made a major, long-term contribution to understanding organic and petroleum systems in Atlantic Canada, around the world, and through the Solar System. I am delighted to support the nomination of Dr. Muki for the Gesner Medal, in view of his splendid contributions to geoscience in the Atlantic region.

Sincerely,

A handwritten signature in black ink that reads "MR Gibling". The letters are cursive and slightly slanted to the right.

Martin Gibling (Emeritus Professor)

Dr. Nick Wilson, *Technical Advisor Geoscience*
Gran Tierra Energy
500 Centre Street SE Calgary, Alberta T2G 1A6
+1 (403) 265-3221



I am writing this letter in support of the nomination of Dr. Prasanta Mukhopadhyay 'Muki' for the Gesner Medal.

I have known Muki for almost 30 years as he was an adviser on my Ph.D. committee. As my thesis involved the association of hydrocarbons with copper mineralization, his experience with organic petrography and petroleum systems, really helped me understand the processes operating in the deposit. Muki was a very supportive and enthusiastic mentor and provided a foundational understanding of organic petrography, and many other techniques, that I have gone on to use throughout my career.

Working for the GSC in Calgary, I was always excited to meet up with Muki at TSOP (The Society of Organic Petrologists) meetings and other geological conferences; he was always keen to hear about the projects I was working on, and to offer advice and suggestion.

For nearly the last 20 years I have worked globally in the oil and gas industry. What has always amazed me is the range of projects that Muki has worked on as the energy industry has evolved. From his early focus in coal, organic geochemistry and petrography, he moved into source rock characterization, maturity modelling, and petroleum systems analyses. As the Coal Bed Methane industry was taking off in the early 2000s, Muki was present working on a range of fields, and in the 2010s, when the industry focused more heavily on unconventional resources, Muki was involved characterizing a range of projects.

I have been impressed by projects Muki has undertaken that were outside of the energy industries. I remember a fascinating presentation on environmental geoscience evaluating the history of the pollution into the Halifax harbor, and he has worked on such diverse topics as combustion residues from power plants to carbon-rich meteorites, and potential oil and gas hydrates on Mars.

Although Muki was a consultant for over the last 30 years, he was still able to publish a vast library of work and has very much been an educator; always presenting new and interesting concepts and has without a doubt promoted the advancement of geoscience within the Atlantic Provinces, across North America, and around the world.

Dr. Nicholas Wilson, Technical Advisor, Geoscience, Gran Tierra Energy

January 6, 2023

Dear Evaluation Board,

It is with great pleasure that I have the opportunity to write this letter recommending Dr. Mukhopadhyay for the Gesner Medal award. Dr. Mukhopadhyay has a long and distinguished career as a petroleum geologist and organic petrographer. He earned his BSc, MSc and PhD degrees in geology and coal petrology at Jadavpur University, India. Afterwards, he completed two postdoctoral positions. The first was a Doctoral Humboldt Fellowship in petroleum geochemistry & organic petrology at Rheinisch-Westfälische Technische Hochschule Aachen / RWTH Aachen, West Germany. This was followed by a second post-doctoral research appointment in petroleum geochemistry as a Humboldt Fellow, at the Technical University of Aachen in Bonn, West Germany.

Since then, Dr. Mukhopadhyay has amassed thirty years of research experiences as a petroleum system analysis for conventional oil and gas exploration in the deep-water Scotian Basin, Gulf of Mexico, Grand Banks, Newfoundland for forty Companies in USA and Canada. He has worked extensively with unconventional shale oil/gas & CBM exploration for thirty-five US and Canadian companies. He has associated with team in Nankai Trough for the discovery of gas hydrates as a petroleum geochemist on the Board of the Glomar Challenger in Leg 87A in Japan. He has also specialized in the petroleum geochemistry and maturation histories of various source rocks from Central and South Atlantic DSDP Holes, Germany, Alberta-Canada, and US - Texas, and Louisiana.

During his career Dr. Mukhopadhyay has been an adjunct faculty member of Dalhousie University from 2000 to 2016 mentoring students and teaching short courses. He also published over thirty-five articles and book chapters. Some of his articles have been cited well over 300 times.

Given his commitment to the field, it is not surprising that Dr. Mukhopadhyay received numerous awards. He was given the Lifetime Achievement Award from The Society for Organic Petrology in 2011. Also, in 2011 he was honored as the Ambassador of Nova Scotia for the Nova Scotia Department of Economic Development and World Trade and Convention Center, Halifax, Nova Scotia, Canada. He became the Charles Taylor Fellow American Association of Petroleum Geologists in 2013 for his outstanding contribution as an Associate Editor for the AAPG Bulletin, which he served between 2001-2013.

Based on this life-long record of accomplishments, I would like to request that you closely consider Dr. Mukhopadhyay for the Gesner Medal.

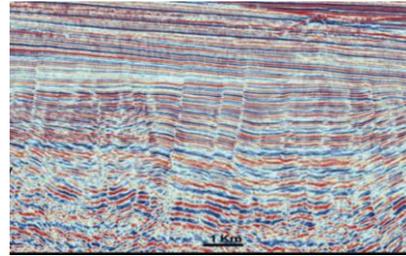
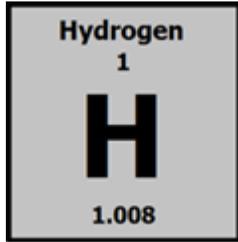
Sincerely,



Prof. G. Todd Ventura, Ph.D.
Associate Professor and Canadian Research Chair Tier II
Department of Geology, Saint Mary's University
Organic Geochemistry Laboratory
923 Robie Street, Halifax, NS, Canada, B3H3C3
todd.ventura@smu.ca

Euxinic Exploration

119, Stravanan Bay SW, Calgary, AB, T3H 1H3



InterOffice Memo

To: AGS Selection Committee for Distinguished Scientist Award (Gesner Medal)

From: Dr. Michael E. Enachescu, P Geo; Euxinic Exploration

Date: January 6 2022

Subject: Letter in support of Dr. Mukhopadhyay nomination

This is a letter in support of Dr Mukhopadhyay nomination for the AGS Distinguished Scientist Award (Gesner Medal).

I have known and studied Dr Mukhopadhyay scientific output for over 30 years. This happened when I worked as Husky Energy geoscientist and later Frontier and International team leader, when I taught and researched as Husky Senior Fellow and Associate Professor of Petroleum Exploration at Memorial University and finally during my time practicing as an Exploration Consultant for companies such as Encana, Statoil, BHP, Nexen, CNOC, Suncor, etc. and the Government of Newfoundland and Labrador.

All through my career, I studied and used Muky's geoscience publications, conference presentations, company reports and for over thirty years I have applied his excellent research toward finding oil and gas, offshore Nova Scotia, Newfoundland and Labrador, in Alberta and elsewhere in international settings.

Muky's education and research is spread over several continents, but his core research was produced in Atlantic Canada. Always sharing his knowledge to benefit of many professionals from research, industry, or academic circles, Muky was known to all of us as a trustful and highly productive scientist that can help you with the right geochemistry information when needed.

A geochemist of high repute and passionate researcher, Muky is worldwide known for his work on coal petrography, organic matter in sediments, petroleum source rocks, environmental geochemistry, shale oil resources, basin modeling, gas hydrates and the relationship between structural setting and source rock maturation, to mention only some of his main research topics.

His research is applied across geological eras, in many continental settings, in various age basins and even in interplanetary settings!

Dr Muky's research collaboration with leading Canadian geoscientists from the GSC Atlantic (BIO), Maritime/Atlantic Universities and Government of Nova Scotia has resulted in seminal publications that vastly helped the Oil and Gas Industry professionals and resulted in new discoveries or in understanding the petroleum potential of the Atlantic sedimentary basins. He also had vast contributions to major world science research projects such as DSDP, ODP, IODP and helped with the understanding of the petroleum systems of WCSB, the Canadian leading energy producer basin.

While his list of publication is vast and covers a large spectrum of topics, many of Muky's studies he undertook for the O&G Industry are confidential, stored in major oil companies' libraries and consulted by professional geoscientists whenever companies are involved in exploration in Atlantic Basins. The studies are used now and will be studied in the future as the Canadian companies and the Multinationals are looking for new sources of energy.

Dr Mukhopadhyay has also taught in formal or informal settings generations of geoscientists and volunteered in several capacities, including as reviewer and editor, with major geological and geochemical science and professional associations. Muky's many publications and collaboration achievements as a geochemist will be essential studies for future explorationists of Atlantic basins.

I also have known Muky as a professional peer, an warm and soft spoken individual ready at any time, on the corridors of conference centers, in the lab or outside on a bench, to have a professional exchange and an ad hoc personal communication on the latest debate of Atlantic petroleum geology. An always beneficial conversation, when his passion for the Atlantic Canada resource potential came strongly across.

For all the above, and many other qualities as human a leading scientist, I am honored to recommend Dr. Muky for the AGS Gesner Medal.

Michael E Enachescu, Ph D. P Geo.
Ex-Husky Senior Fellow at Memorial University
Ax Associate and Adjunct Professor

Michael Enachescu

Prof. Grant D. Wach
Professor of Petroleum Geoscience-Basin & Reservoir Characterization
Director - Energy at Dalhousie
Department of Earth and Environmental Sciences
Dalhousie University
1459 Oxford Street / P.O. Box 15000
Halifax, Nova Scotia, B3H 4R2

8 January 2023

Dear Grant

I am pleased to write this letter in support of the nomination of Dr. Prasanta K. Mukhopadhyay (Muki) for the Atlantic Geoscience Society's Gesner Award. I have known Muki since 1990 both professionally and personally. Over this period I believe he has advanced, through his research, publications and organizational activities, geochemical and related knowledge on Atlantic Canada's petroleum and coal geology as well as seminal work on environmental geoscience.

Muki's experience and knowledge is vast and is respected internationally. He has worked in many regions of the world and in basins of varying geologic ages, and is acknowledged by his peers as an authority in organic geochemistry (petroleum and environmental), petroleum systems and basin modelling, coal petrology, carbon sequestration, and gas hydrates. Beyond our planet he has research and published on astrobiology as related to carbonaceous chondritic meteorites and comet dust, and evidence of gas hydrates on Mars.

At the start of his career in the early 1980s he participated in several Deep Sea Drilling Project legs in the eastern Atlantic, and then later created his successful international consultancy business offering his service to global industry, government and private clients with clients. Given the nature of Muki's company's business model, the majority of his research remains unpublished as proprietary reports to global petroleum industry companies and governments. However, much is available to the public through his longstanding collaboration with the Geological Survey of Canada-Atlantic through the publication of many GSC Open File Reports and sample and analytical reports at the Canada-Nova Scotia Offshore Petroleum Board. This proprietary and public knowledge is invaluable to researchers and explorers seeking knowledge on the geochemistry of the Atlantic region's petroleum source rocks and coals.

Muki has a strong belief in the dissemination of geoscience knowledge, and over the past four decades published many peer-reviewed papers, most related to offshore Nova Scotia. He has presented and promoted the results of his research on the petroleum systems of offshore and onshore Atlantic Canada at many important international geoscience conferences, as well as organized symposia at these gatherings. Muki was an early proponent of encouraging scientific cooperation and technical meetings towards understanding the Nova Scotia and Moroccan conjugate margins that is vital to improving their prospectivity and encouraging exploration. To that end he organized and chaired the Nova Scotia session at the first Moroccan Association of Petroleum Geologists meeting in 2007. This was a precursor to the successful Conjugate Margins Conferences held biennially since 2008 in countries bordering the Atlantic realm. He has found time to act as a reviewer and editor for several peer-reviewed technical journals and publications.

Locally, he organized and was chairman of two very successful Society of Organic Petrologists (TSOP) meetings in Halifax (1998 and 2011), and participated actively in many other TSOP meetings through presentations on Atlantic Canada geology and geochemistry. Muki was also active as an organizer and presenter in the Maritime Energy Association CORE conferences Technical Seminars throughout the 1990s and 2000s sponsored by the Halifax chapter of the Petroleum Society of the CIMM.

In conclusion, I believe that Dr. Muki is a worthy candidate for the Gesner Award based on the Award's criteria having "developed and promoted the advancement of geoscience in the Atlantic Region" and whose contributions are "large enough scope to have made an impact beyond the immediate Atlantic Region." Thank you for coordinating the nomination of this respected award to a deserving scientist.

Sincerely,

A handwritten signature in black ink that reads "David E. Brown". The signature is written in a cursive, flowing style.

David E. Brown
Senior Advisor Geology (retired)
Canada Nova Scotia Offshore Petroleum Board

145 Ridgevale Drive
Bedford, Nova Scotia
B4A 3S5

Dr. P.K. Mukhopadhyay

14 Plateau Crescent

Halifax, NS B3M 2V6

(Provided January 5th by Mrs. Seuli Mukhopadhyay)

Dr. Prasanta K. Mukhopadhyay (a.k.a. Dr. Muki)

30 years of Research Experience in Petroleum System Analysis for :(1) Conventional Oil & Gas Exploration in the Deepwater Scotian Basin, GOM, and Grand Banks, Newfoundland for 40 Companies in USA and Canada; (2) Unconventional Shale Oil/Gas & CBM Exploration for 35 US and Canadian Companies; (3) Associated with team in Nankai Trough for the discovery of Gas Hydrates as Petroleum Geochemist on Board of the Glomar Challenger in Leg 87A in Japan; and (4) Specialized on the petroleum geochemistry and maturation histories of various source rocks from Central and South Atlantic DSDP Holes, Germany, Alberta-Canada, and US - Texas, and Louisiana

Specialties: Petroleum System Analyst; Petroleum Geochemistry; Organic Petrology (Maturation and Organic Facies), Petroleum Systems Modelling and Oil/Gas "Sweet Spot Identification

Expertise in Shale Oil and Shale Evaluation for Play Fairway Analysis and "Sweet Spot" evaluation

Experience

Global Geoenergy Research Limited, Halifax, Nova Scotia

President & Advisor Geochemistry/Modelling

Mar 2006 – Aug 2016

Halifax, Nova Scotia, Canada

1. Unconventional Oil and Gas Resource Evaluation of various shale deposits from North America (e.g. Barnett, Eagle Ford, Duvernay, Montney, Exshaw (Bakken) etc.) based on Geochemistry, Maturation and Organic Facies, Mineralogy, Heat Flow, and Stress issues on Fractures
2. Review & write contract reports combining various parameters from petroleum geochemistry, geophysics, geology, and organic petrology and evaluate the oil & gas potential of various basins of the world

President

Mar 1990 – August 2016

Halifax, Nova Scotia

To communicate and work with sub-contractors in various discipline and supervise maturity measurements, talking and discussing with companies by travelling other locations in North America to acquire new contracts, and communicating with other member of Global Geoenergy Research Limited, delivering short courses in various oil companies, universities, research organizations, and conferences.

Owner

Feb 1990 - Present 33 years

Halifax, Nova Scotia

Coordinate contract research on Petroleum System Risk Assessment (including Petroleum Geochemical analyses and Petroleum System Modeling) for conventional (specialized in deepwater geochemistry and maturation) and unconventional (coalbed methane, shale gas, and gas hydrate) petroleum exploration

President

Dr. P.K. Mukhopadhyay

14 Plateau Crescent

Halifax, NS B3M 2V6

Feb 1990 – Present 33 years

Halifax, Nova Scotia, Canada

To compile, interpret, and write comprehensive on petroleum geochemical, maturation, and petroleum system modeling in association with geophysical and other geological data in deep water/ultra deep water, (conventional) and unconventional shale oil or shale gas related basins in the world. These interpretative reports eventually lead to properly identifying the "Sweet Spots" and resource evaluation for both deep water and unconventional oil and gas exploration research.

Owner

1990 - 2016

Specialist in Petroleum Geochemistry & Organic Petrology

Adjunct Professor

Adjunct Professor, Dalhousie University, Earth Sciences Department

Halifax, Nova Scotia

Feb 2000 – Aug 2016

Guided Students for PhD and Master of Science Theses. Delivered Short Course on Maturation, Geochemistry and, Petroleum System Modeling of Shale Oil and Shale Gas Resource Evaluation for 2013 AAPG Annual Convention in Pittsburgh, PA, and Presented Special Invited Talk at the 2013 Canadian Shale Oil Conference in Calgary, Alberta



Associate Editor (voluntary work)

[American Association of Petroleum Geologists \(AAPG\)](#)

Jan 2002 - Dec 2013

Reviewing and editing manuscripts for improving the quality of the AAPG Bulletin, Memoir, Special Publications, etc. for future publication in the journal or books

Advisor (Consultant) for Geochemistry and Petroleum System Modelling

Murphy Oil

Apr 2008 - Oct 2008

Houston, Texas

Research Evaluation on the Geochemistry and Petroleum Systems Modelling of the Deep-water Sediments from the Gulf of Mexico

Advisor/Senior Consultant, Geochemistry and PS Modeling, GOM Deepwater Exploration Group

Murphy Oil Exploration

Apr 2008 - Oct 2008 7 months

Dr. P.K. Mukhopadhyay

14 Plateau Crescent

Halifax, NS B3M 2V6

Houston, Texas

Reviewed, interpreted, and wrote a PowerPoint report the all the Petroleum Geochemical work from the Deep and Ultra-deep water Eastern and Central Gulf of Mexico and Mexico and initiated a 3D Petroleum System Modeling in lease area of Murphy Oil in the Eastern GOM. Presented several oral talks on those issues in front of various scientists working in the deep-water GOM.

Senior Research Scientist

Geofuel Research Institute, Sydney, Nova Scotia, Canada

Jan 1988 - Jun 1989 (1 year 6 months)

Supervised research work on various petroleum system analysis and coal evaluation projects in the Bay of Fundy, Scotian Basin, Carboniferous Coal Basins in Nova Scotia and New Brunswick

Research Associate

Texas Bureau of Economic Geology, The University of Texas at Austin

1985 – 1988 (3 years)

Hydrocarbon Potential and Evaluation of Gases in Texas Lignite. Scientist on Board of ODP Leg 107, Tyrrhenian Sea, Mediterranean Sea, Geochemistry of the Spraberry Formation, West Texas

Research Scientist and In charge of Organic Petrology Laboratory

Institute of Petroleum Geochemistry (ICH-5)

Jul 1980 - Dec 1984 years 6 months

KFA, Jülich, NRW, Germany

Research work on various DSDP Leg wells on geochemistry and petrology, VR measurement lab.

Geochemist

Oil and Natural Gas Commission,

Mar 1978 - Jun 1982 years 4 months

Dehra Dun, India

Geochemical Evaluation of various Indian Basins (Bombay Offshore, Krishna Godabari, Cambay, Bengal)

Education

Jadavpur University

Ph.D, M.Sc, B.Sc on Coal Geology and Coal Petrology

1960 - 1971

Rheinisch-Westfälische Technische Hochschule Aachen / RWTH Aachen

Post Doctoral Humboldt Fellow in Petroleum Geochemistry & Organic Petrology

1975 - 1976

Associate Editor, AAPG Bulletin (2002-2011)

Geochemist on Board of Glomar Challenger DSDP leg 87 Projects and discovered Gas Hydrates in Nankai Trough, Japan in 1982 and ODP Leg 107 in Tyrrhenian Sea, Europe

Volunteer Experience

Associate Editor

American Association of Petroleum Geologists (AAPG)

Jan 2002 - Dec 2013 12 years

Apart from reviewing manuscripts, it was a great experience to help students and scientists from various countries in the world to review and possibly revitalize their manuscripts that were published later in AAPG Bulletin, Memoir, and special Books

Publications

- **Petroleum Systems of Deepwater Scotian Basin, Eastern Canada: Challenges for Finding Oil versus Gas Provinces.**
Published by Offshore Technology Conference, Houston, Texas May 2, 2003
Please see OTC Proceedings 2003
- **Petroleum Systems of Deepwater Scotian Basin, Eastern Canada: Challenges for Finding Oil versus Gas Provinces.**
Proceedings Offshore Technology Conference, Houston, Texas, p. 1-11 May 2003
An Invited Publication
- **Energy and Environmental Issues. Special Volume, IJCG, Volume 43**
Elsevier Science Publication, Amsterdam, the Netherlands 2000
An Edited Book
- **Vitrinite Reflectance as a Maturity Parameter: Applications and Limitations.**
American Chemical Society vol. 370, Washington D. C. U.S.A. Aug 1994
Book on Vitrinite Reflectance
- **Maturation of Organic Matter as Revealed by Microscopic Methods**
1992 Elsevier Science Publishers 1992
Diagenesis III, Development in Sedimentology, 47, p. 435-510. Please see the actual publication
- **Coal and Terrestrial Organic Matter as a Source of Petroleum, Special Volume of Organic Geochemistry, Volume 17 (6)**
Elsevier Publications), Oxford, England 1991
An Edited Book

Projects

- **Geochemical Evaluation Shale Oil & Shale Resources of Selected Western Canadian Source Rocks**

- **Shale Oil Resources of East Coast Canada**, Mar 2011 – Present

2012 - Present

An evaluation of selected source rocks from the Mississippian Banff-Exshaw or Bakken and Triassic Montney/Doig formations from Alberta (Western Canada) and the Mississippian Horton Group shale sequences from New Brunswick (Eastern Canada) were evaluated based on the methane adsorption characteristics within the shale network in relation to organic facies (maceral variability related to anoxicity of the deposition regime), maturity and mineral matrix effects (the effect of mineral incorporation...

Show more

- **A universal, unconventional petroleum system exists throughout our solar system**

Oil present in extraterrestrial environments is derived from living organisms through processes very close to those at work on Earth.

<https://spie.org/news/1699-a-universal-unconventional-petroleum-system-exists-throughout-our-solar-system?SSO=124> July 2009

Prasanta K. Mukhopadhyay, David J. Mossman, and James M. Ehrman (2009)

SPIE International society for optics and photonics

Honors & Awards

- **Charles Taylor Fellow**
American Association of Petroleum Geologists, Tulsa, Oklahoma, Editorial Committee
Feb 2013
For his outstanding contribution as an Associate Editor for the AAPG Bulletin served between 2001-2013 for editing various manuscripts for AAPG Bulletin, Special Books and Memoirs published within these years
- **Ambassador of Nova Scotia**
Nova Scotia Department of Economic Development and World Trade and Convention Center, Halifax, Nova Scotia, Canada Aug 2011
- **Lifetime Achievement Award or Honorary Membership Award**
The Society for Organic Petrology, Washington D.C. USA
Aug 2011
Selected as one of the Elite Organic Petrologists of the World who has achieved Worldwide Recognition for the Application of Organic Petrology and Geochemistry in Petroleum and Coal Exploration
- **Certificate of Recognition**
Premier of Nova Scotia and Department of Petroleum Directorate, Nova Scotia, Canada
Jul 1998

Dr. P.K. Mukhopadhyay

14 Plateau Crescent

Halifax, NS B3M 2V6

In Recognition of His Scientific Achievements and Dedication to the Coal and Petroleum Industries in Nova Scotia

□ **Senior Humboldt Post Doctoral Fellow**

Alexander von Humboldt Stiftung, Bonn-Bad Godesberg, Germany

Mar 1975

Post Doctoral Research on Petroleum Geochemistry with Prof. D. H. Welte at the Institute for Coal and Petroleum, Aachen, Germany

Languages

English, German, Hindi, Bengali

List of Publications Dr. P.K. Mukhopadhyay from Google Scholar

With number of citations

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Prasanta+k+mukhopadhyay++&btnG=

- 1) [Peat formation in a westphalian B piedmont setting, cumberland basin, Nova Scotia: Implications for the maceral-based interpretation of rheotrophic and raised ...](#)

JH Calder, [MR Gibling](#), PK Mukhopadhyay - 1991 - **Environmental Science, Bulletin De La Société Géologique de France, Vol. 162, pp. 283-298**

This paper proposes a maceral-based method of interpretation of ancient peat-forming ecosystems (mires), based on criteria used in classification of modern peatlands (groundwater ...

[Cited by 334](#)

- 2) [Organic facies and maturation of Jurassic/Cretaceous rocks, and possible oil-source rock correlation based on pyrolysis of asphaltenes, Scotian Basin, Canada](#)

PK Mukhopadhyay, JA Wade, MA Kruger -, 1995 – **Organic Geochemistry 22(1):85-104**

DOI:[10.1016/0146-6380\(95\)90010-1](https://doi.org/10.1016/0146-6380(95)90010-1)

This paper establishes source rock characterization and oil-oil and oil-source rock correlations of selected organic-rich shale source rocks and selected light oils and condensates from ...

[Cited by 285](#)

- 3) [Vitrinite reflectance as maturity parameter: petrographic and molecular characterization and its applications to basin modeling](#)

PK Mukhopadhyay - 1994 - ACS Publications

[edited by] Prasanta K. Mukhopadhyay, Wallace G. Dow.

Washington, DC : **American Chemical Society, 1994.**

x, 294 p. : ill. ; 24 cm. [ACS symposium series 570](#)

Huminite/Vitrinite, primarily derived from the lignin, cellulose, and tannins of vascular plants (especially from the periderm [bark] and xylem [wood] tissues), is the major maceral (1) in ...

[Cited by 216](#)

- 4) [Organic petrography, and organic geochemistry of Texas Tertiary coals in to depositional environment and hydrocarbon generation.\[USA-Texas\]](#)

PK Mukhopadhyay - 1989 - **The University of Texas at Austin, Bureau of Economic Geology, Report of Investigations No. 188, 118 p.**

[Cited by 136](#)

- 5) [Composition of Coal: Chapter 4](#)

PK Mukhopadhyay, [PG Hatcher](#) - 1993

Doi: <https://doi.org/10.1306/St38577C4>

As in any other sedimentary rock, the composition of coal is extremely heterogeneous. Coal is largely a macromolecular organic rock, derived from the burial and compaction of peat ...

[Cited by 104](#)

- 6) [Hydrocarbon involvement in the genesis of ore deposits: an example in Cretaceous stratabound \(Manto-Type\) copper deposits of central Chile](#)

..., R Boric, NSF Wilson, PK Mukhopadhyay... - International Geology ..., 1997 - Taylor & Francis
The analysis of the empirical association of organic carbon in its various forms (eg, oil, gas, coal) with a variety of ore-deposit types can be a rewarding exercise in the formulation of ... (1997). *International Geology Review*. 39. 1-21. 10.1080/00206819709465257.

[Cited by 37](#)

7) [A molecular evaluation of contaminants and natural organic matter in bottom sediments from western Lake Ontario](#)

MA Kruge, PK Mukhopadhyay, CFM Lewis - [Organic Geochemistry, Volume 29, Issues 5–7, November 1998, Pages 1797-1812, Elsevier](#)

Py-GC/MS analysis of bottom sediment from Lake Ontario was shown to be effective in assessing organic contaminants, especially attractive as it is a rapid technique requiring little ...

[Cited by 38](#)

8) [Geochemistry and petrography of organic matter in sediments from Deep Sea Drilling Project Sites 545 and 547, Mazagan Escarpment](#)

J Rullkötter, PK Mukhopadhyay... - ..., K., Winterer, EL, et ..., 1984 - deepseadrilling.org

Jurgen Rullkotter and Prasanta K. Mukhopadhyay and Rainer G. Schaefer and Dietrich Hugo Welte, year={1984} }DOI:[10.2973/DSDP.PROC.79.132.1984](#), Corpus ID: 55825857

[Cited by 41](#)

9) [Multibeam sonar backscatter lineaments and anthropogenic organic components in lacustrine silty clay, evidence of shipping in western Lake Ontario](#)

CFM Lewis, LA Mayer, PK Mukhopadhyay 2000 - [International Journal of Coal Geology Volume 43, Issues 1–4, May 2000, Pages 307-324](#)

[Cited by 20](#)

10) [Characterization of amorphous and other organic matter types by microscopy and pyrolysis-gas chromatography](#)

PK	Mukhopadhyay	-	Organic	Geochemistry
Volume	14,	Issue	3,	1989,
			Pages	269-284

[Cited by 24](#)

11) [Application of environmental organic petrology and geochemistry to fingerprint organic pollutants in the recent sediments of Lake Ontario](#)

PK Mukhopadhyay, MA Kruge... - 1997, [Environmental Geosciences](#) 4(3):137 – 148 DOI:[10.1111/j.1526-0984.1997.00035.pp.x](#)

[Cited by 13](#)

12) [Comparison of Mesozoic carbonaceous claystones in the western and eastern North Atlantic \(DSDP Legs 76, 79 and 93\)](#)

J Rullkötter, PK **Mukhopadhyay** - Geological Society, London ..., 1986 - sp.lyellcollection.org, Environmental Science, Geography, **Geological Society, London, Special Publications, Vol 21, pp. 377-387.**

DOI : [10.1144/GSL.SP.1986.021.01.27](https://doi.org/10.1144/GSL.SP.1986.021.01.27), Corpus ID: 129267305

[Cited by 14](#)

13) [Quantitative microscopic spectral fluorescence measurement of crude oil, bitumen, kerogen, and coal](#)

PK **Mukhopadhyay**, J Rullkötter - *Am. Assoc. Pet. Geol., Bull.;*(United States), 1986 - *AAPG Bulletin*,
year={1986}, volume={70}

[Cited by 10](#)

14) [Effects of degradation on spectral fluorescence of alginite](#)

B Spiro, PK **Mukhopadhyay** - *Erdoel Kohle, Erdgas, Petrochem. Brennst ...*, 1983 - osti.gov

**Journal Name: Erdoel Kohle, Erdgas, Petrochem. Brennst.-Chem.; (Germany, Federal Republic of);
Journal Volume: 36:7, pp. 297-299**

Degradation of algae is observed in transmitted white light microscopy as alteration of the typical shape and inner structure. It affects also their fluorescence spectra manifested by a shift ...

[Cited by 12](#)

15) [Jurassic and mid-Cretaceous carbonaceous claystones in the Western \(DSDP Leg 76\) and eastern \(DSDP Leg 79\) North Atlantic](#)

J Rullkötter, PK **Mukhopadhyay** - *Organic geochemistry*, 1984 - Elsevier

Deep-sea drilling in the Blake Bahama Basin, DSDP Leg 76 (Site 534), and at the Mazagan Escarpment off Morocco, DSDP Leg 79 (Site 547), recovered carbonaceous claystones of ...

[Cited by 6](#)

16) [PDF] [15. GEOCHEMISTRY AND PETROGRAPHY OF ORGANIC MATTER IN CRETACEOUS SEDIMENTS FROM THE SOUTHEASTERN GULF OF MEXICO, DEEP ...](#)

J Rullkötter, PK **Mukhopadhyay**, B Hartung, DH Welte - 1984 - deepseadrilling.org [Organic Geochemistry](#)

Volume 6, 1984, Pages 761-767

[Cited by 5](#)

17) [Genetic Relationship between Salt Mobilization and Petroleum System Parameters: Possible Solution of Finding Commercial Oil and Gas within Offshore Nova Scotia ...](#)

PK **Mukhopadhyay**, PJ Harvey, K Kendell - 2006 - **Gulf Coast Association of Geological Societies Transactions**

Vol. 56 (2006), Pages 627-638 [Cited by 4](#)

18) [Regional Maturation Study in the King Christian Island Area, Arctic Canada](#)

[T Gentzis](#), F Goodarzi, PK **Mukhopadhyay** - 1998 *Energy Sources*, 20:10, 891-912, DOI:

[10.1080/00908319808970106](https://doi.org/10.1080/00908319808970106)

[Cited by 3](#)

19) [The implication of maturation and heat flow analysis for conventional \(deepwater\) and unconventional \(shale oil and shale gas\) petroleum systems: Evolution ...](#)

PK **Mukhopadhyay** - Dallas, TX: AAPG Annual Meeting ..., 2014 - Search and Discovery Article #80387 (2014)**

Session Honoring 50 Years of Wallace Dow's Contributions to Petroleum Geochemistry and Source Rock

Characterization, AAPG

Annual Convention and Exhibition, Houston, Texas, April 6-9, 2014

Other presentations from this session and posted on Search and Discovery are Article #80375 (2014) by Wallace Dow, Article #80385 (2014) by Robert Sterling and Anne Grau, and Article #80386 (2014) by Kenneth Peters.

**AAPG©2014

- 20) [**B Spiro, PK Mukhopadhyay, DH Welte - AAPG Bulletin, 1982**](#) - archives.datapages.com

The lower Frontier Formation, Moxa arch, Wyoming, consists of sandstones and mudstones deposited in a wave-dominated delta and strand-plain system which prograded into the ...

[Cited by 1](#)

- 21) [**Petroleum systems of deepwater Scotian Basin, Eastern Canada: challenges for finding oil versus gas provinces**](#)

PKM Mukhopadhyay, DE Brown, AG Kidston... - Offshore Technology ..., 2003 - onepetro.org

The preliminary Petroleum System Risk Assessment (PSRA) has predicted the presence of viable petroleum systems with possible gas-or light oil-saturated deepwater fans and other ...

[Cited by 5](#)

- 22) [**The case for vestiges of Early Solar System biota in carbonaceous chondrites: petroleum geochemical snapshots and possible future petroleum prospects on Mars ...**](#)

PK Mukhopadhyay, DJ Mossman... - ... Methods, and Missions ..., 2007 - spiedigitallibrary.org

This research documents the analysis and interpretation of selected Carbonaceous Chondrites (CC) including Murchison, Allende, NWA 3003, Dhofar 735, Orgueil, Tagish Lake and

[Cited by 3](#)