Biographical Details

1. Name in Full: MEHROTRA NARESH CHANDRA
(Surname followed by forenames)

2. Date of Birth: October 14th, 1951

3. Nationality: Indian

4. Field of Specialization: Palynology as Applied in Hydrocarbon Exploration; Dinoflagellate studies; Integrated Palaeobotany in understanding Palaeoclimate

5. Designation: Director

6. Address

a. Official:

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7. Sectional Committee: IV *Earth & Planetary Sciences:* Surface and Solid Earth Science, Atmospheric Science, Ocean Science and Planetary Science.

Alternate Committee(s) if any.

(Allocation of subjects to Sectional Committees is indicated on the last page. Alternate Committee(s), if any, may also be indicated separately. However, the nomination will be considered only under one sectional committee).

8. **Academic career and professional attainments: The Proposer is requested to furnish, under this head, all information regarding the nominee's degree and post graduate academic qualifications and distinctions.**

(a)	**Degree**	**Institution**	**Year**	**Remarks**
	B.Sc.	University of Lucknow (UP)	1969	Geology, Chemistry, Botany
	M. Sc.	University of Lucknow (UP)	1971	Geology
	Proficiency Certificate	University of Lucknow (UP)	1973	French
	Ph.D. (Geology)	University of Lucknow (UP) (worked at BSIP)	1979	**Title :** Palynostratigraphy of Mikir Formation, North Cachar Hills, Assam

(b) Awards / Special Attainments

- 1982 - Awarded **Government of India National Scholarship** in Geology for post–Doctoral studies at the University of Saskatchewan, Saskatoon, Canada on "Phytoplankton in Oil Exploration".
- **2007** - **Birbal Sahni Birth Centenary Award**, Indian Science Congress Association for life time achievements in the development of Palaeobotany.
- **2007** - **S.N. Bhalla Gold Medal-2006**, Palaeontological Society of India, Lucknow for outstanding life time contributions.
- **2009** - **L.R. Rama Rao Centenary Award, Geological Society of India, Bangalore** for Life Time contribution to Indian biostratigraphy and Palaeontology.
- **2009** - **Palaeobotanical Society Diamond Jubilee Award,** Palaeobotanical Society, Lucknow – Life time contribution for development of Palaeobotany.
- **ONGC Several Internal Awards for outstanding contributions in Biostratigraphy during 1987-2000**

(c) Intellectual property, technological innovations, new products etc.

Not Applicable

(d) Other relevant information

- President, Palaeobotanical Society, Lucknow
- Member, Governing Body, WIHG (upto 2010), Dehradun, NCAOR, Goa.
- Chairman, Research Advisory Council, Regional Science Centre, Lucknow.
- Member Council and Fellow, Geological Society of India
- Served in ONGC (1980-2005) after doing Ph.D. from BSIP (1972-77) and working at WIHG (1977-1980) on Himalayan Stratigraphy. While in ONGC provided useful Palynological backup data in hydrocarbon exploration in different prospective basins.
- Organised Conferences / Symposium as Chairman – Seven (2005-2011), including three international; two on Palynology / Micropalaeontology in Hydrocarbon Exploration; one on Polar Research; one on Climatic Change and Geo-hydrology.
- International Collaborations (Principal Investigator) with Brazil and China on Biostratigraphy / Palaeoclimate.

9. A critical analysis highlighting the most innovative contributions of the nominee that have made a difference (If necessary, attach additional sheets).

Stratigraphy of sedimentary basins of India is built upon the fossil data. In the past few decades, palynofossils have played a major role in building the biostratigraphy of petroliferous basins of India, more significantly in areas where micropaleontological data is poor, besides solving many complex stratigraphic problems and suggesting new areas for exploration.

"Palynology in Hydrocarbon Exploration – the Indian Scenario" (Part-I) is a co-authored memoir in which 50 years of published information on petroliferous basins is detailed. The volume includes numerous scientific contributions which have helped build the palynostratigraphy of Cambay, Mumbai Offshore, Krishna-Godavari, Cauvery and Assam-Arakan basins and their source rock evaluation. This is based on integrated palynological data tied up with lithostratigraphy. **The volume serves as a handy database for stratigraphic studies.**

High resolution palynological biostratigraphy is based on phytoplankton. Dinoflagellates, one such important group of microfossils was least understood and documented by most Indian palyologists till mid eighties when a series of joint publications by Mehrotra and Sarjeant (7 Publs.) were brought out from East Coast of India. The latter were the first to document, describe and illustrate their complex morphologies from India. These proved very useful to biostratigraphers, particularly those associated within hydrocarbon exploration because of their immense biostratigraphic value and paleoceanographic significance.

"Palynology in Hydrocarbon Exploration (Part-II) : Spatial and temporal distribution of selected spores/pollen and dinoflagellate cyst taxa from the Mesozoic – Tertiary sediments of Petroliferous basins of India" includes stratigraphic ranges of palynotaxa; their botanical affinities; ecology; and paleoceanography. Forty-five detailed stratigraphic range tables are included, summarizing the large volume of palynological data. The volume has a concluding chapter dealing with evolution of angiosperms, plate tectonics, migration routes, provincialism and **implications in exploration of hydrocarbons**.

Published two atlases covering Mesozoic and Tertiary dinoflagellate cysts from Krishna-Godavari Basin. A maximum sequence stratigraphic resolution of 0.4 to 1 million year has been established for Krishna-Godavari and Mumbai Offshore basins. Also successfully reconstructed the paleogeography and paleoenvironmental models to understand relative sea level changes and develop sequence biostratigraphy. The work on source rock evaluation has helped in identifying depo-centres for the development of petroleum source rocks. The above information is of **immense value in refining existing geological models for reducing exploration risk**.

The information disseminated is bringing out remarkable changes in the field of high-resolution biostratigraphy to give lead in hydrocarbon exploration particularly the stratigraphic traps. The publications (Major Publications 1 to 4) **serve as a ready reckoner** for **instant use in interpretation to biostratigraphers** and **basin modelers for hydrocarbon exploration:**

Recently, initiated development of high impact palynological studies at BSIP, related to fossil fuel exploration and paleoclimate. Thrust is given to multidisciplinary and multi-institutional integrated approach. First record of Type I matured liptinite organic matter from Late Neoproterozoic sediments and new data in understanding of biostratigraphy of Ganga Basin are considered significant. The pre-Tertiaries in Ganga Basin seems to be an extension of Marwar Supergroup. These too indicate presence of hydrocarbons.

Initiated Polar research and geological studies in obtaining a better understanding of climatic changes.

***10. A brief statement, not exceeding 200 words, regarding the most innovative contribution of the nominee which, in the opinion of the Proposer, should be circulated to the Fellows. The impact of the contribution should be highlighted.**

- Introduction and development of dinoflagellate cysts studies in ONGC leading to high-resolution palynological biostratigraphy and biochronostratigraphy for application in reservoir level correlation useful for exploration and development of oil fields.

- Generated palynological database from Indian petroliferous basins (produced 5 major publications) immensely useful in delineating the hydrocarbon potentiality in the National context.

- Application of high-impact palynological data in a sequence stratigraphic framework integrated with source rock evaluation data for geological modeling of various basins. These include: (a) In Western Offshore leading to successful exploration in Panna and Wedge out prospects (b) Presence of reworked Carboniferous palynomorphs in Panna Formation suggesting possibility of a new basin for exploration within the Deccan Syneclise.

- Development of Industrial Palynology at BSIP. Discovery of potential source rocks in Late Neoproterozoic of Marwar, Rajasthan and Ganga Basin are significant. The pre-Tertiary in Ganga Basin seems to be an extension of Marwar Supergroup.

- Recently established Polar Research Cell at BSIP and initiated glaciological studies to fully utilize integrated palaeobotanical data in the understanding the past climatic changes (especially in the last 10,000 years) for having a better understanding of present climatic changes and conceptualizing future predictive models.

** Please note that information beyond 200 words is liable to be deleted in the Book of Nominations – which is circulated to the Fellows.*

***11. List up to ten important publications and / or patents: including (a) name of author(s), (b) year, (c) title, name of journal, (d) volume and pages.**

Mehrotra NC & Kapoor PN, 1999. Palynology in Hydrocarbon Exploration– Advancements in Indian Perspective. *J. Geol. Soc. India* **53**: 637-648.

Mehrotra NC, Swamy SN & Rawat RS, 2001. Reworked Carboniferous palynofossils from Panna Formation, Bombay Offshore: A clue for hidden exploration target. *J. Geol. Soc. India* **57**: 239-248.

Mehrotra NC, Venkatachala BS, Swamy SN & Kapoor PN, 2002. Palynology in hydrocarbon exploration, Part I : The Indian Scenario, Geol. Society of India, Bangalore. Memoir No. 48, 2002, pp. 162, figs. 1–28, plates 1–20

Mehrotra NC & Aswal HS, 2003. Atlas of Dinoflagellate Cysts from Mesozoic–Teritary Sediments of Krishna–Godavari Basin, Volume–I: Late Jurassic–Cretaceous Dinoflagellate Cysts; Paleonotographica Indica, KDMIPE, ONGC special publication, No. 7:145 p., 36 plates.

Mehrotra NC & Singh Kamla, 2003. Atlas of Dinoflagellate Cysts from Mesozoic–Teritary Sediments of Krishna–Godavari Basin, Volume–II: Tertiary Dinoflagellate Cysts; Paleonotographica Indica, KDMIPE, ONGC special publication, No. 8: 134 p., 36 plates.

Mehrotra NC, Venkatachala BS, & Kapoor PN, 2005. Palynology in Hydrocarbon Exploration – the Indian Scenario, Part–II: Spatial and temporal distribution of significant spores/pollen and dinoflagellate cyst taxa from the Mesozoic–Tertiary sediments" – (Geological Society of India memoir No. 61, pp 1-128, 45 stratigraphic range charts).

Mehrotra NC, Babu R, Tewari R, Jha N, Kumar, P., Singh, V. K. and Shukla, M. 2008. New Global opportunities for Hydrocarbon Exploration in Neoproterozoic Basins of Indian Subcontinent. J. Geol. Soc. India, vol. 72, pp. 543-546.

Mehrotra NC, Venkatachala BS & Kapoor PN 2010. Palynology in Hydrocarbon Exploration: High Impact Palynological Studies in Western Offshore and Krishna-Godavari Basins J. Geol. Soc. India, No. 75: 364-379.

Madhav Kumar, Tewari Rajni, Chatterjee, S & **Mehrotra N.C.** 2011, Charcoalified plant remains from the Lashly Formation of Allan Hills, Antarctica: Evidences of forest fire during the Triassic Period, Episodes, Vol. 34, no. 2, pp. 109-118.

Spicer, R.A., Bera, Subir, Bera, Sreelekha De, Spicer, Teresa E.V., Srivastava, Gaurav,Mehrotra, Rakesh, **Mehrotra, Naresh** & Yang, Jian, 2011. Why do foliar physiognomic climate estimates sometimes differ from those observed? Insights from taphonomic information loss and a CLAMP case study from the Ganges Delta. Palaeogeography, Palaeoclimatology, Palaeoecology Vol. 302, pp. 381–395.

** In the case of a nominee being considered for application of science / engineering and technology, the most significant property, technological, new products, etc. may be listed.*

12. A 50-word citation highlighting the work of the scientist which justifies the claim to the Fellowship *(This will be in addition to 200 word write-up required for Book of Nomination):*

His development of state-of-the-art knowledge, application of new ideas and concepts, integrated approach and promoting team work are responsible for considerable enhancement of application of palynological information in hydrocarbon exploration and climate change in India. This is evidenced from his five major and research publications broadening the knowledge base in applied palynology.

13. A list of five best papers in the entire career of the scientist (*without any consideration for citation analysis etc; There can be overlap with the list given in item 11. Please provide PDF versions of full text of your five best papers in a separate CD)*

Mehrotra NC, Venkatachala BS, Swamy SN & Kapoor PN, 2002. Palynology in hydrocarbon exploration, Part I : the Indian Scenario, Geological Society of India Memoir No. 48, 2002, pp. 162, figs. 1–28, plates 1–20

Mehrotra NC, Venkatachala BS, & Kapoor PN, 2005. Palynology in Hydrocarbon Exploration - the Indian Scenario, Part–II: Spatial and temporal distribution of significant spores/pollen and dinoflagellate cyst taxa from the Mesozoic–Tertiary sediments. Geological Society of India Memoir No. 61, pp 1-128, 45 stratigraphic range charts.

Mehrotra NC, Babu R, Tewari R, Jha N, Kumar P, Singh VK and Shukla M. 2008. New Global opportunities for Hydrocarbon Exploration in Neoproterozoic Basins of Indian Subcontinent. J. Geol. Soc. India, vol. 72, pp. 543-546.

Mehrotra NC, Venkatachala, BS and Kapoor PN. 2010. Palynology in Hydrocarbon Exploration: High Impact Palynological Studies in Western Offshore and Krishna-Godavari Basins. J. Geol. Soc. India, Vol. 75, pp. 364-379.

Spicer, R.A., Bera, Subir, Bera, Sreelekha De, Spicer, Teresa E.V., Srivastava, Gaurav,Mehrotra, Rakesh, **Mehrotra, Naresh** & Yang, Jian, 2011. Why do foliar physiognomic climate estimates sometimes differ from those observed? Insights from taphonomic information loss and a CLAMP case study from the Ganges Delta. Palaeogeography, Palaeoclimatology, Palaeoecology Vol. 302, pp. 381–395.