

JSPS-DST Japan-India Forum for Advanced Study

“Progress and perspective of the studies on the crustal evolution of the Indian Peninsula from Archean to the present by geochemical, chronological and geological approaches”

7 -16 March, 2019
at Nagoya Univ., NIPR, and Niigata Univ.

7~10 March Nagoya Univ.

- **Session1: Precambrian craton-margin orogenic belts and their tectonic implications**
- **Session2: Continental and marine sedimentation around Indian continent through geological time**
- **Session3: New frontier of research in origin and evolution of continents: Planetary and environmental sciences**

11 March Field excursion 1

12 March National Institute of Polar Research

- **Workshop: Introduction of SHRIMP**

13 March Field excursion 2

14~16 March Niigata Univ.

- **Session4: Continent formation by accretion from Archean to present days**
- **Session5: Supercontinents**
- **Short Course: Application of thermodynamics in Geosciences using Perple_X**

JSPS-DST Forum Schedule

March 7 – 16, 2019

March 7, 2019

Registration and Ice-breaking party

13:00 – 17:30 Registration at Lecture Hall (Floor-1) at Environmental Studies Hall Building, Nagoya University

18:00 – 20:00 Ice-breaking party at Restaurant “Hana-no-ki” in Green Salon Higashiyama, Nagoya University

March 8, 2019

Venue: Lecture Hall at Environmental Studies Building, Nagoya University

9:00 – 9:05 Welcome note by Hiroshi Hidaka

9:05 – 9:15 Highlights of the JSPS-DST Science Forum by Harinder P. Singh

9:15 – 9:25 Announcements

Session 1: Precambrian craton-margin orogenic belts and their tectonic implications

Convenors: Kaushik Das (Hiroshima University), Sankar Bose (Presidency University)

9:30 – 10:20 Ian C.W. Fitzsimons (Curtin University) – *Pan-African charnockites of southern India: A record of orogenic plateau formation and collapse?*

10:20 – 10:40 Coffee break

10:40 – 11:10 M. Satish-Kumar (Niigata University) – *Isotope geochemistry of metacarbonate rocks in continental collision zones as proxies for sedimentation age, tectonic setting and environment of deposition*

11:10 – 11:50 S. Balakrishnan (Pondicherry University) – *Is the Dharwar Craton a melange of Archean mobile belts?*

11:50 – 13:30 Lunch Break

13:30 – 14:10 M. Jayananda (University of Hyderabad) – *Volcano-sedimentary greenstone sequences in the Dharwar craton: Windows to Archean mantle, surface environments and biosphere*

14:10 – 14:30 V. J. Rajesh (Indian Institute of Space Science and Technology) – *Petrogenesis, geochronology and tectonic significance of Fe-Ti-P Gabbro in Achankovil Shear Zone, southern India*

14:30 – 14:50 Coffee break

14:50 – 15:20 Sankar Bose (Presidency University) – *Prolonged geological evolution of a craton margin mobile belt: Evidences from the Rengali Province-Singhbhum Craton sector, Eastern India*

15:20 – 16:00 Partha P. Chakraborty (University of Delhi) – *Tectonics and stratigraphic riddles in Mesoproterozoic basins at the Eastern margin of Indian craton*

16:00 – 17:30 Poster Presentations + Coffee

1. Proloy Ganguly (Presidency University) – *Styles of tectonothermal and tectonometamorphic processes in the Proterozoic: Insights from the northern part of the Eastern Ghats Belt, India*

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2. Yasutaka Hayasaka (Hiroshima University) – *The Maizuru tectonic zone (MTZ), its formation and rearrangement as revealed by new zircon chronology data*
3. Kaushik Das (Hiroshima University) – *Minor elements with major effect in deep crustal granulites: Fluorine in UHT rocks from the Eastern Ghats Belt, India*
4. A.S. Silpa (Niigata University) – *A comparative anatomy of mafic dyke swarms in Dharwar and other Archean cratons*
5. Swapnil Kumar Rai (Benaras Hindu University) – *Metamorphic evolution of the ultra high temperature (UHT) Mg-Al granulites from Madurai Block, Southern Granulite Terrane (SGT): Key issues and challenges*
6. Kenta Kawaguchi (Hiroshima University) – *Discovery of 480 Ma mylonitized diorite - quartz diorite body at the northern margin of Saganoseki Peninsula, Southwest Japan and relationship between Sambagawa terrane and Paleozoic igneous rocks of Kurosegawa tectonic zone*
7. Keita Itano (University of Tokyo) – *Evolution of continental crust elucidated by an integration of detrital zircon and monazite records*
8. Mohd. Azhar-Ul-Haq (Pondicherry University) – *U-Pb zircon geochronology of charnockites and migmatitic gneisses of the Madras Block, Southern India; Implications for Neoproterozoic magmatism and metamorphism*

March 9, 2019

Venue: Lecture Hall at Environmental Studies Building, Nagoya University

Session 2: Continental and marine sedimentation around Indian continent through geological time

Convenors: Partha P. Chakraborty (University of Delhi), Kohki Yoshida (Shinshu University)

9:30 – 10:00 Tetsuya Sakai (Shimane University) – *Landslide records in delta and fluvial plain deposits in Nepal Himalayas: examples from Kathmandu Valley and Siwalik Hills*

10:00 – 10:30 Kohki Yoshida (Shinshu University) – *Detrital heavy mineral record and Nd–Sr isotopic signature in Bengal Fan demonstrating evolution of Himalaya and historical changes in two big river discharges*

10:30 – 10:50 Coffee Break

10:50 – 11:20 Supriyo Kumar Das (Presidency University) – *Pleistocene stable nitrogen isotope ($\delta^{15}N$) record of marine biogeochemical response to climate forcing in the Bay of Bengal*

11:20 – 11:40 Subham Chatterjee (Presidency University) – *Reconstruction of paleoseismic record in Andaman Basin using lipid biomarkers*

11:40 – 12:00 Toru Nakajima (Kyoto University) – *Middle Miocene denudation of the Higher Himalayan Crystalline revealed by the chemical composition of detrital garnet from the Siwalik foreland basin sediments, western and central Nepal*

12:00 – 12:20 Lalit Kumar Rai (Shinshu University) – *Lithostratigraphy and facies analysis of Siwalik along Muksar Khola section, Eastern Nepal Himalaya*

12:20 – 13:30 Lunch Break

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13:30 – 14:00 P.P.Chakraborty (University of Delhi) – *Precambrian fluvial systems: a pitfall in 'Uniformitarianism' doctrine?*

14:00 – 14:30 Aditi Sharma (University of Delhi) – *A relook to the Sleemanabad Formation-Parsoi Formation distinction and their transition, Mahakoshal Group, Central India, India*

14:30 – 15:00 Rasikh Barkat (University of Delhi) – *Stratal architecture of regressive Panium Sandstone, Kurnool Group, India*

15:00 – 15:20 Coffee Break

15:20 – 15:50 Fumito Shiraishi (Hiroshima University) – *Biogeochemistry from India—future prospectus—*

15:50 – 16:20 Ramananda Chakrabarti (Indian Institute of Science) – *Significant variability in $^{87}\text{Sr}/^{86}\text{Sr}$ and $\delta^{44}\text{Ca}$ in water samples from the Bay of Bengal: implications for paleo-seawater compositions*

16:20 – 16:50 Anupam Banerjee (Indian Institute of Science) – *Significant variability in $\delta^{44}\text{Ca}$ of carbonatites and associated silicate rocks from the Ambadongar and Phenai Mata complexes, western India: implications for recycled carbonates in the mantle, crustal contamination and source heterogeneity*

March 10, 2019

Venue: Lecture Hall at Environmental Studies Building, Nagoya University

Session 3: New frontier of research in origin and evolution of continents: Planetary and environmental sciences

Convenors: Hiroshi Hidaka (Nagoya University), Amit Basu Sarbadhikari (Physical Research Laboratory)

9:30 – 10:00 Hiroshi Hidaka (Nagoya University) – *REE isotopic study for cosmochemistry: La isotopic variations by spallation reactions*

10:00 – 10:30 Amit Basu Sarbadhikari (Physical Research Laboratory) – *Alkaline rocks of the Moon: Recent Discoveries and Implications for Formation*

10:30 – 11:00 S. K. Sahoo (National Institutes for Quantum and Radiological Science and Technology) – *Search for Pu and U traces in Fukushima soil samples using alpha and mass spectrometry*

11:00 – 11:30 A.P. Nutman (University of Wollongong) – *Eoarchaeon Life (3.7 Ga) Confirmation from Isua (Greenland)*

11:30 – 11:40 Guidance for the field excursion 1 to Mt. Fuji by M. Satish-Kumar (Niigata University)

11:40 – 13:30 Lunch Break

13:30 – 15:00 Poster presentations + Coffee

9. Keisuke Sakuma (Nagoya University) – *Ba isotopic compositions of CM Chondrites*

10. J. M. Guotana (Kanazawa University) – *Serpentinization and carbonation of dunites in the western part of the Isua Supracrustal Belt, Southwestern Greenland*

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11. M. Rajamanickam (National Institutes for Quantum and Radiological Science and Technology) – *Geochemical, Sr and Nd isotopic studies on meta-volcanic rocks of the Shimoga greenstone belt, Dharwar Craton, India: Evidence for continental arc magmatism during Mesoproterozoic*
12. Vishal Goyal (Punjab University) – The early thermal evolution and differentiation of Moon and its importance to crustal growth of Earth

15:00 ~ Campus tour of Nagoya University

March 11, 2019

Field excursion 1: Mt. Fuji Volcano on the way from Nagoya to Tachikawa

March 12, 2019

Workshop: Introduction of SHRIMP

Convenor: Hiroshi Hidaka (Nagoya University), Tomokazu Hokada (National Institute of Polar Research), Kenji Horie (National Institute of Polar Research)

Venue: Auditorium (2nd Floor), National Institute of Polar Research, Tachikawa

9:30 – 10:30 Ian S. Williams (Australian National University) – *Geological Secondary Ion Mass Spectrometry*

10:30 – 11:10 Chang-Sik Cheong (Korea Basic Science Institute) – *Phanerozoic tectonomagmatic evolution of the Korean Peninsula: An overview from geochronological, geochemical, and O-Hf isotopic perspectives*

11:10 – 11:50 Allen P. Nutman (University of Wollongong) – *Eoarchean (3.67-3.60 Ga) repeated high and low pressure granulite facies events in the Nuuk region (Greenland): Earliest records of arc heat, collisional orogeny and late-orogenic lower crustal flow*

11:50 – 12:00 Guidance for the field excursion 2 to Nagatoro Sanbagawa schist by Tomokazu Hokada (National Institute of Polar Research)

12:00 – 14:00 Lunch Break

14:00 – 16:00 Visit to Analytical facilities at National Institute of Polar Research

- a) Demonstration of analytical application by SHRIMP
- b) Visit to Meteorite collection
- c) SelFrag (Sample pulverization system using pulse power of high voltage discharge)
- d) Visit to Polar Science Museum

March 13, 2019

Field excursion 2. Nagatoro Sanbagawa schists on the way from Tachikawa to Niigata

March 14, 2019

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March 7 – 16, 2019

Session 4: Continent formation by accretion from Archean to present days

Convenors: M. Satish Kumar (Niigata University), Tomokazu Hokada (National Institute of Polar Research), and Sajeev Krishnan (Indian Institute of Science)

Venue: Library Hall, Ikarashi Campus, Niigata University

9:15 – 9:20 Introduction to the JSPS-DST Science forum: M. Satish-Kumar (Niigata University)

9:20 – 9:30 Welcome Address by Executive Vice-President, Niigata University

Plenary Lecture

9:30 – 10:30 William F. McDonough (Maryland University) – *Differentiation of the Earth and growth of the continents*

10:30 – 10:50 Coffee break

10:50 – 11:20 S. Balakrishnan (Pondicherry University) – *Geochemical and geochronological studies on granite-greenstone belts of the Dharwar Craton: Evidence for plate tectonic assisted accretion from Mesoarchean*

11:20 – 11:50 Yuichiro Ueno (Tokyo Institute of Technology) – *The Late Archean CO₂-world or hazy atmosphere?*

11:50 – 12:10 Shinnosuke Aoyama (Niigata University) – *Surface sulfur in Archean granitoids from Dharwar craton, Southern India constrained by multiple sulfur isotopes.*

12:10 – 13:00 Lunch Break

13:00 – 13:30 James A.D. Connolly (Swiss Federal Institute of Technology) – *A hydromechanical model for metamorphic devolatilization and fluid flow in ductile rocks*

13:30 – 14:10 M. Jayananda (University of Hyderabad) – *Early Earth dynamics, continental growth and craton formation : Insights from the Dharwar craton, Southern India*

14:10 – 14:30 M. Satish-Kumar (Niigata University) – *Geological and geochemical evidence for short lived rifting and arc volcanism in the Archean Western Dharwar Craton, southern India*

14:30 – 14:50 Tomokazu Hokada (National Institute of Polar Research) – *Geological Evolution of Napier and Rayner Complexes: Implications for India-Antarctica relations in Archaean and Proterozoic*

14:50 – 15:10 Coffee Break

15:10 – 15:40 Ramananda Chakrabarti (Indian Institute of Science) – *Calcium isotopic variability in the mantle*

15:40 – 16:10 Hiroshi Hidaka (Nagoya University) – *REE isotopic study for cosmochemistry: Sm, Gd, and Er isotopic variations induced by neutron capture reactions*

16:10 – 16:40 Tsuyoshi Iizuka (The University of Tokyo) – *Zr isotope constraints on early Earth differentiation*

16:40 – 17:00 A.S. Silpa (Niigata University) – *Geochemical evolution of mafic dykes from Tiptur area, Western Dharwar craton, southern India*

17:00 – 18:30 Poster Presentations

13. D. Harinadha Reddy (Indian Institute of Science) – *Numerical modelling of UHT metamorphism in Lithosphere*

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14. Lakshmanan Sreehari (Niigata University) – *Tectonic evolution of the Hiroo Complex and its implication in paleo-Kuril Arc evolution*
15. Mami Takehara (National Institute of Polar Research) – *Disturbance of U-Pb and trace-element systems in hydrothermally altered zircon*
16. Yoshihiro Nakamura (AIST, Geological Survey of Japan) – *P-T estimations of Kashio mylonite in Oshika, Nagano, Japan: Constraints on the amalgamation of Ryoke and Sambagawa metamorphic belts*
17. Kota Suzuki (Kyoto University) – *P-T estimates of the Lützow-Holm Complex by focusing on distributions of trace elements and inclusions in garnet in pelitic gneisses*
18. Vanessa Andrade (Niigata University) – *Refining age estimates for predecessors of the 2004 Sumatra- Andaman earthquake and the Indian Ocean tsunami*
19. Sam Uthup (Tsukuba University) – *Neoarchean arc magmatism in the southern part of the Nilgiri Block, southern India*
20. Durgalakshmi (Australian National University) – *Timing and evolution of UHT metamorphism in eastern Gondwana*
21. Akari Imura (Niigata University) – *Lead and neodymium isotope geochemistry of metacarbonate rocks from the Highland Complex, Sri Lanka*
22. Otgonbayar Dandar (Tohoku University) – *Formation of secondary olivine after orthopyroxene induced by highly oxidizing fluid in the mantle wedge: An evidence from the Khantaishir Ophiolite, western Mongolia*
23. Astin Nurdiana (Tohoku University) – *Pore throat network by feldspar replacement with potassium-rich fluids on the top of granitic magma during supercritical fluid processes*
24. P.G. Athira (Niigata University) – *Detrital zircon geochronology, Hf isotope studies and geochemistry of beach sediments from southwest coast of India: Implications for provenance*
25. Shun Watanabe (Niigata University) – *Petrological and Geochemical features of Miocene volcanic rocks in the Hokuriku region, Central Japan*
26. Keisuke Suzuki (Niigata University) – *Paleo arc development during Permian-Early Triassic based on detrital zircon U-Pb ages and sandstone provenance of the Hida Gaien belt*
27. Ryusei Kohta (Niigata University) – *Stratigraphy and clastic composition of the Sorachi Group of Hokkaido, Japan - Another oceanic plate in the Mesozoic NW Pacific*
28. Raiki Yamada (Niigata University) – *Temporal evolution of continental-arc to island-arc felsic volcanism during the back-arc formation in the Japan Sea: Oligocene to Miocene rhyolites in the Tonami area, central Japan*
29. Claude Nambaje (Indian Institute of Science & Niigata University) – *Source, geochemical evolution and tectonic settings of granitic rocks from Karagwe Ankole Belt (Rwanda), central-east Africa*
30. Vinod Samuel (Yonsei University) – *Characteristics of granulite facies metamorphism followed by arc magmatism in the Nilgiri Block, southern India*
31. Tadashi Usuki (National Taiwan University) – *Prograde zoning of Zr in rutile: A new time scale indicator of eclogite-facies metamorphism*

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32. Chiranjeeb Chatterjee (Indian Institute of Science) – *Contamination and mixing of older Archean crust during the genesis of the early Proterozoic TTG phase: A study approach from the southeastern margin of the Eastern Dharwar Craton*

March 15, 2019

Venue: Library Hall, Ikarashi Campus, Niigata University

Session 5: Supercontinents

Convenors: M. Satish Kumar (Niigata University), T. Hokada (NIPR), and Sajeev Krishnan (Indian Institute of Science)

9:00 – 9:20 Kazuyuki Shiraishi (National Institute of Polar Research) – *Geology of eastern Dronning Maud Land, East Antarctica --- 60 years of Japanese contribution ---*

9:20 – 9:50 Ian C.W. Fitzsimons (Curtin University) – *Hafnium isotopes and the rise and fall of the Gondwanan super-mountains*

9:50 – 10:20 Chang Whan Oh (Chongbuk National University) – *The continental collision process deduced from the metamorphic pattern in the Himalayan and Qinling-Dabie-Sulu-Hongseong-Odesan Collision Belts*

10:20 – 10:40 Toshiaki Tsunogae (University of Tsukuba) – *Phase equilibria modelling of fluid-induced high-temperature metasomatism in granulite terranes*

10:40 -11:00 Coffee Break

11:00 – 11:40 Bernardo Cesare (University of Padova) – *Nanogranitoids and their bearing on crustal melting*

11:40 – 12:10 Tetsuo Kawakami (Kyoto University) – *Disequilibrium REE compositions of garnet and zircon in migmatites reflecting different growth timings during single metamorphism (Aoyama area, Ryoke belt, SW Japan)*

12:10 – 12:40 Sajeev Krishnan (Indian Institute of Science) – *Continental growth during an inauspicious time*

12:40 – 14:00 Lunch break and poster session

14:00 – 14:30 Eichi Takazawa (Niigata University) – *Drilling of crust - mantle transition in the CM site of Samail ophiolite: the ICDP Oman Drilling Project*

14:30 – 14:50 V. J. Rajesh (Indian Institute of Space Science and Technology) – *Petrogenesis, tectonics and economic significance of Neoproterozoic Alaskan-type ultramafic rocks in Palghat Cauvery Suture Zone, southern India*

14:50 – 15:10 Harinadha Reddy (Indian Institute of Science) – *Numerical modeling of UHT metamorphism in the lower crust of eastern Gondwana*

15:10-15:30 Coffee break

15:30 – 16:00 Ian S. Williams (Australian National University) – *An Introduction to oxygen isotope geochemistry*

16:00 – 17:00 Ian S. Williams (Australian National University) – *A practical introduction to oxygen isotope geothermometry*

18:30 – 21:00 Closing Ceremony and Banquet @ ANA Crowne Plaza Hotel, Niigata

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March 16, 2019

Short Course on “*Application of thermodynamics in Geosciences: A hands-on short course on construction of phase diagrams for minerals and fluids using Perple_X*”

Venue: Multimedia room (A 519), Faculty of Science, Ikarashi Campus, Niigata University

9:00 – 12:00 and 13:00 – 15:00 James A.D. Connolly (Swiss Federal Institute of Technology)