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
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
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 Neoarchean 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 Siwwali k along Mukar 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 Fumi to Shiraishi (Hiroshima University) – Biogeochemistry from India—future prospectus—

15:50 – 16:20 Ramananda Chakrabarti (Indian Institute of Science) – Significant variability in $^{87}$Sr/$^{86}$Sr and $\delta^{44}/^{40}$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 $\delta^{44}/^{40}$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) – Eoarchaean 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
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 Mesoarchean

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) – Eoarchaean (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 filed excursion 2 to Nagatoro Sanbagawa schist by Tomakazu 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
**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 CO-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 from 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 Neoarchean 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
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)