Curriculum Vitae

Sanjit Kumar Pal
Professor and Head
Department of Applied Geophysics
Indian Institute of Technology (Indian School of Mines)
Dhanbad-826004

DOB: 10-07-1976
Web of Science Researcher ID: **M-2188-2016**
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Scopus Author ID: **36960001700**

- **Expertise :** Near Surface Geophysics; Environmental Geophysics; Mining Geophysics; Archaeological Geophysics, Engineering Geophysics and Geotechnical Modelling**,** Satellite remote Sensing; Image processing and GIS
- **Teaching:** Satellite remote Sensing, Image processing and GIS, Engineering Geophysics and Geotechnical Modelling, Near Surface Geophysics, Solid Earth Geophysics
- **Field Experience:** Different geophysical, engineering geological, remote sensing data

- **Associate Editor of Acta Geophysica, Springer Int,** from Poland, a Q2 impact factor 2.3
- **Executive Council Member, Indian Geophysical Union**

Salient Key Points

- Present employment: **IIT(ISM) Dhanbad since 2012**
- Past Employment: **NHPC Limited from June 2004 to January 2012**
- Academic Record : **PhD (IIT Kharagpur) and M.Sc. Tech. Geophysics (BHU**, **Varanasi**)
  PhD Supervised : **25 PhD supervised** (7 Sole guide, 17 Principal Guide with joint guidance and 1 Co-guidance)
- PhD Supervised Ongoing : **8 (Sole: 2; Principal guide: 6)**
- Research project ongoing : **9 with total cost of Rs.719.2 Lakh (**Rs.361.28 Lakh as PI; Rs. 198.00 Lakh PI of Dept. Project, Rs.231.31 Lakh as Co-PI**)**
- Research project Completed : **6 with total cost of Rs. 442.55 Lakh (**Rs.70.62 Lakh as PI; Rs. 371.93 Lakh as Co-PI**)**
- Consultancy project ongoing : **2 with total cost of Rs. 41.3 Lakh as PI**
- Consultancy project completed : **23 (Rs.196.06 Lakh as PI; Rs.79.61 Lakh as Co-PI)**
- EDP Courses: **1 as PI of Rs. 7.85 Laks and 5 as a staff**
- Papers published in peer reviewed SCI/SCIE Journals : **92 with total JCR impact factor of ~228.5 and average impact factor of ~2.753 (Q1:20; Q2:18; Q3:5; Q4:31)**
- Total JCR impact factor of the published journal : **228.5, with average impact factor 2.75**
- Web of Science Reviewer Summary: **219 peer review records of 154 manuscripts**
- Papers published in National Journal: **Four**
- Papers in International conference proceedings : **21**
- Papers in National conference proceedings : **31**
- Dissertations of M.Sc. Tech guided : **62**
- Dissertations of M. Tech guided : **21**
- Membership Of Professional Bodies/Organizations : **Six**
- Member of M.Sc. /M.Sc. Tech. of Admission Committee from **2013 to 1018**
- Coordinator, M. Tech. (Earthquake Science and Engineering) **w.e.f. 4.12.2017 to 2021**
- Time-Table in-charge since **2012 to December, 2018**
- Research Infrastructure Developments at AGP, IIT(ISM): **21 instruments of total Rs. 430.5 Lakh and 12 software of total Rs.70.35 Lakh**
- Administrative Guide: **4 PhD Students**
- Head of the Department of Applied Geophysics: Continuing from **17.08.2022**

Detailed Bio-data

- **Employment**

Employer	Position held	Date of Joining	Date of Leaving
IIT(ISM), Dhanbad	Professor (Academic Pay level 14A)	17.08.2023	Continuing
IIT(ISM), Dhanbad	Associate Professor in PB-4 /13A2	07.11.2017	16.08.2023
IIT(ISM), Dhanbad	Assistant Professor in PB-4	22.06.2014	06.11.2017
IIT(ISM), Dhanbad	Assistant Professor	02.02.2012	22.06.2014
NHPC Limited	Assistant Manager (Geophysics)	01.04.2010	31.01.2012
NHPC Limited	Geophysicist	05.06.2006 27.06.2005	31.03.2010 31.05.2006
NHPC Limited	Trainee Officer (Geophysics)	26.06.2004	26.06.2005

- **Academic Record starting with secondary education**

Examination	Branch/Specialization	College/University/Institute	Year
Madhyamik/Matric or Equivalent	General	West Bengal Board of Secondary Education	1992
H.S. or Equivalent	Science	West Bengal Council of Higher Secondary Education	1994
B.Sc.	Mathematic Honours	The University of Burdwan	1997
M.Sc. Tech.	Geophysics	Banaras Hindu University	2001
Ph. D.	Geology and Geophysics	IIT Kharagpur	2009

PhD Supervised

S No.	Name of PhD scholar	Date of joining	Date of award	Fellowship	Title of thesis	Guide	Publication	Present position
1	Mr. Abhay Kumar Bharti 2014DR0052	31.01.14	04-11-16	IIT (ISM)	Electrical Resistivity Tomography for mapping of coal mine voids over parts of Jharia and Raniganj Coal fields, India	Dr. S. K. Pal	4(Q1, 3Q2)	Scientis-C, CIMFR - Dhanbad
2	Mr. Jitendra Vaish 2012DR0006	06.02.12	22-01-18	IIT (ISM)	Time-lapse study of coal fire characterization over parts of Jharia Coalfield, India	Dr. S. K. Pal	4 (Q2, Q3, 2Q4)	Executive Engineer, ONGC
3	Miss Komal Rani 16DP000022	3.06.16	01.04.19	NRSC, ISRO	Integrated use of Emissivity, Thermal Inertia and Geophysical Data for Geological Mapping in Parts of Banswara, Rajasthan, India	Dr. S. K. Pal and Dr. Arindam Guha	5(Q2, 3Q4)	Scientis-C, NIO Goa
4	Mr. Satya Narayan 2014DR0184	11.07.14	18.06.19	IIT (ISM)	New insights into the structural and tectonic settings of Bay of Bengal offshore region using combined global gravity model data	Dr. S. K. Pal	3 (Q1, Q2, Q4)	Senior Geophysicist, ONGC
5	Jyoti Sharma 2015DR1023	27.11.14	20.06.20	ISR, Gandhi Nagar	Imprints of Plume-Lithosphere Interaction Beneath the Northwestern Deccan Volcanic Province from Rayleigh and Love Wave Tomography	Dr. S. K .Pal; Dr. M. Ravi Kumar, ISR, Gandhi Nagar; Prof. P.N.S. Roy, IIT, Kharagpur	2 (Q1, Q2)	Scientis-C, Gandhinagar, Gujarat and Postdoc, at Southern Methodist University
6	Mr Sahadev Kumar 2012DR0169, sahadev08@gmail.com	27.08.12	15.03.21	IIT (ISM)	Combined Self-Potential, Magnetic, and Electrical Resistivity Methods for Characterization of Coal Mine Fires in Parts of Jharia Coalfield, India,	Sanjit Kumar Pal (Guide) and Prof. Shalivahan, (Co-Guide)	1(Q4)	Senior Geophysicist, ONGC
7	Mr. Subhendu Mondal 2016DR0062 subhendu.agp@gmail.com	15.02.16	07.10.21	IIT (ISM)	Integrated Remote Sensing and Geophysical Study of Sittampundi Layered Complex area of Tamilnadu	Dr. S. K. Pal and Dr. Arindam Guha	3(2Q1, 1Q2)	Senior Geophysicist, My world Cons. Pvt. Ltd
8	Somak Hajra 17DP000205 somakhajra1990 @gmail.com	07/12/16	02.12.21	WIHG	STRUCTURE OF THE CRUST AND UPPER MANTLE BENEATH THE KUMAON HIMALAYA	Dr. S. K. Pal and Dr. Devajit Hazarika, WIHG and Prof. P.N.S. Roy, IIT Kharagpur	3(Q1, Q2, Q2)	Postdoc, University of Alberta
9	Suresh Kannaujiya 2015DR1104	08-01-2016	26.4.22	IIRS, ISRO	Multiparametric Geodetic and Geophysical approaches to unveil the linkage of crustal deformation and seasonal variation in the Northwest	Dr. S. K. Pal and and Prof. P.N.S. Roy, IIT Kharagpur	3(Q2, 2Q3)	Scientist , IIRS, ISRO

					Himalaya			
10	Mr. Partha Sarkar 2014DR0051	31.01.2014	25.08.2022	IIT (ISM)	Evaluation of large earthquake potential in north east himalayan fault zone using gps strain and seismicity analysis	SK Pal and Prof.P.N.S Roy	3(2Q2, Q3)	Project Scientist(Tempo), MOES
11	Mr. Avinash Chouhan, 2015DR1179	06.10.2015	14.11.2022	ISR, Gandhi Nagar	Lithospheric structure and geodynamic evolution of the Cambay rift and adjoining region: Insights from gravity data	SK Pal and Dr. P. Choudhury	2 (Q1, Q3)	Scientist, Bihar
12	Ms. Mamuni Sucheeta Ekka, 2015DR0065	06.02.2015	14.11.2022	IIT (ISM)	Seismic structure beneath Indian Ocean and its seismogenic potential	SK Pal, Prof.P.N.S Roy and Prof. O.P. Mishra	2 (Q1, Q2)	Project Associate, NGRI
13	Miss Dharmita Horo, 16DR000143	01.08.2016	06.12.22	IIT (ISM)	Integrated Geological and Geophysical Studies of the Auriferous zones in parts of North Singhbhum Mobile Belt, Jharkhand, India	SK Pal and Prof. Sahender Singh	2 (Q3, Q4)	-
14	Mr Soumyashree Debasis Sahoo, 16DR000192	01.08.2016	06.12.22	IIT (ISM)	Characterization of crustal structures over Central Indian Ridge: appraisals on the basis of spreading rate, crustal age, and magmatism process	SK Pal and Prof. G.S Rao	5 (4Q2, Q4)	Assistant Professor, IIT Bhubaneswar
15	Shuva Shankha Ganguli 16DP000037	4.7.2016	09.2.2023	GSI	Gravity-magnetic appraisal of Crustal architecture in parts Southern Granulite Terrain and Cuddaph Basin, India	SK Pal	**5**	Director(Geophysics), GSI
16	Sandeep Gupta 14DR0288	08/04/14	09.2.2023	MOES	Seismic Hazard Estimation of Bihar-Jharkhand using GPS, strain	S K Pal, Prof. P.N.S Roy and Dr. V. K. Gahalaut	**2**	RA, IIRS
17	Ravindra K. Gupta 17DR000427	01.07.17	03.04.2023	IIT (ISM)	Seismic site characterization and site response study of Dhanbad city and Nirsa (India)	Mohir Agarwal and S K Pal	**3**	RA, IIT Roorkee
18	Saurabh 2016DR0107	19.02.16	28.4.2023	IIT (ISM)	Integrated approach for geophysical investigation within the coal and bauxite mines in parts of the eastern India	SK Pal	**1**	RA, NTPC
19	Rajwardhan Kumar 2015DR0134	22.09.15	12.5.2023	IIT (ISM)	Integrated geophysical assessment for sustainable mining in parts of Jharia and Raniganj Coalfields, India	SK Pal	**1**	RA, ISM
20	Ujjawal Kumar 2015DR1096	7.08.15	26.6.2023	IIT (ISM)	New insights on structure and tectonics of a part of Western Indian Ocean using global gravity model data	SK Pal	**3**	MECL
21	Mr. Sarvesh Kumar 17DR000570	30.10.17	14.07.23	ISRO	Integrated Remote sensing and geophysical study for appraisal of Kimberlite emplacement in parts of the Dharwar and Bundelkhand cratons.	SK Pal and Dr. A. Guha	**4**	Halliburton
22	John P Pappachen 2016DR1136	08.04.2016	4.10.23	WIHG	Crustal deformation studies in the Garhwal-Kumaun Himalaya, Northwest India: An investigation on the kinematics of plate boundary faults using geodetic measurements	S K Pal and Dr. Rajesh S.	**2**	
23	Mr. Rajkumar 18DR0008	9.04.2018	04.12.23	MoES	Unraveling geodynamics and earthquake hazards in Northeast Himalayas using Seismo-geodetic data	S K Pal and Dr. S. K. Prajapati	**2**	
24	Mr. Dhirendra Nath Yadav 2015DR1104	09.07.2015	22.3.24		Subsurface structure and Seismotectonic Investigations of Kinnaur Himalaya: Constraints from waveform modeling of Seismological data	SK Pal, Dr. N. Kumar, and Prof.P N. S. Roy	3	AMD/DAE
25	Sanjay Kumar Verma 18DP000353	25.08.2017	24.4-2024	WIHG	A study on crustal structure in the northwest Himalaya using ambient noise tomography and gravest mode of free earth oscillations based on superconducting gravimeter data	SK Pal, Dr. N. Kumar, and Prof.P.N.S Roy	**2**	
	Review Report received and Viva-Voce to be conducted							

- **PhD ongoing**

Sl. No.	Name of JRF	Reg No.	Date of Joining	Probable date of Pre-Subm	**Guide**	Broad area of research/ Title of thesis	Published paper in SCI journal
• **Thesis under review**							
1							
• **Thesis in final stage for submission**							
1	Vivek G Babu	17DP000187	02.11.2016	August 2022	SK Pal, Dr. N. Kumar, and Prof.P.N.S Roy	Quantification of seismic regimes of the Northwest Himalaya: Seismic hazard implication and characterization of earthquake source parameters	1

a. Research project ongoing

1. Murthy V.M.S.R., Kumaraswamidhas L.A., Krishna D G, Sahoo P.R., and Pal SK, Assessment of Rock Mass Rippability through Geotechnical Investigations for Aiding Selection of Suitable Ripper for Joda East and Khondbond Mines of Tata Steel Limited**" Rs. 28,59,687.00, PROJECT NO : TATA STEEL/2023-2024/1070/MECH. Start date: 29.01.2024**
2. Murthy V.M.S.R., Kumaraswamidhas L.A., Krishna D G, Sahoo P.R., and **Pal SK**, Assessment of Rock Mass Rippability through Geotechnical Investigations for Selection of Suitable Ripper and its Operating Parameters for Sandstone Formations of West Bokaro Mine, Tata Steel Limited. **Rs. 42,79,109.00, PROJECT NO : TATA STEEL/2023-2024/1069/MECH. Start date: 29.01.2024**
3. Pasupuleti S. (PI), Khatri V.N. (Co-PI), Choudhary, B.S. (Co-PI), **Pal, S. K. (Co-PI),** Sinha A. (Co-PI) Hydrology Study in Chandmari Mine Lease of Hindustan Copper Ltd (HCL), Khetri Nagar, Rajasthan. **Project cost Rs. 14,07,947/-. Hindustan Copper Ltd (HCL), Khetri Nagar, Rajasthan. Project No. HCL/2023-24/1006/CE**
4. **Pal, S. K. (PI)** Anil Kumar and Anshumali Integrated non-invasive geophysical, archeological and biogeochemical characterization of Itkhouri heritage sites in the Mohane River Valley. **DST (TDT)(SHRI) [Department of Science & Technology {Technology Development & Transfer (Science & Heritage Research Initiative)}].** DST/TDT/SHRI-16/2021(C &G), dated 08.02.2022. **Project cost Rs. 1,25,92,682.00. Sanction date: 08.02.2022. DST(TDT)(SHRI)(327)/2021-2022/888/AGP.**
5. Prasoon Kumar Singh (PI) and **Pal, S. K. (Co-PI)** Development of guidelines for delineation of water stressed area and designing of environmental friendly water storage structure for meeting the water needs in mining areas. Project No. CIL(20)/2021-2022/845/ESE. **Project cost Rs.1,07,84,000.00, Coal India Limited, Ministry of Coal Sanction date: 10.01.2022**
6. Samadder S.R. (PI), **Pal, S. K. (Co-PI)** Rejuvenation of existing waterbodies and identification of suitable locations for storing surface water for sustainable water supply in Dhanbad Municipal Corporation Area. Rs.820000.00, IIT(ISM)/2022-2023/905/INSTITUTE. Sanction date: 18.07.2022**,**
7. **Pal, S. K. (PI)** and Sahendra Singh (Co-PI), Geological and Geotechnical Studies for Jangi-Thopal, Hydoelectric Project, SJVN/2020-2021/745/AGP; SJVN Ltd, Govt. of India, Rs.35,40,000.00 Lakh. Saction date: 03.12.2020.
8. Anshumali, Pathania T., **Pal S.K.,** Chanda K., Renu V, Barman B., 2021, Delineation of the Administrative Boundary of the Banki River, Garhwa District, Jharkhand: An

Implication in Restoration and Conservation of the Ganga River Basin. IIT(ISM)/2021-2022/826/INSTITUTE. **Rs. 21,00,000.00; 20.9.2021**

9. Anshumali, Singh P.K., Singh U.K., Srinivas Pasupuleti, **Pal S.K.**, Mishra B.K., Renu V, Chanda K., Pathania T., 2021, Identification of suitable sites and designing of environmental friendly rainwater harvesting structures for catching the rain where it falls when it falls in the IIT(ISM) campus area. PROJECT NO : IIT(ISM)/2021-2022/803/INSTITUTE. Rs. 8,80,000.00. Sanction date :01.06.2021.

Principal Investigator

Research project Completed

1. **Pal, S. K. (PI),** Bhattacharjee R M, Paul P. S. and Chatterjee R. Study of hazards due to mining induced sub-surface cavities and waterlogged areas in inaccessible old workings in underground coal mines using geophysical technique. Project No. CIL(16)/2020-2021/792/AGP (CMPDI/B&PRO/MT-173). **Project cost Rs.19996000.00, Coal India Limited, Ministry of Coal Sanction date: 17.02.2021**
2. Mohanty P.R., Shalivahan, **Pal S. K.,** Srinivasa Rao Gangumalla, Mohit Agrawal, To augment the post graduate teaching and research facilities in the Department of Applied Geophysics. DST sanctioned letter No. SR/FST/ES-1/2017/12, 16-01-2018. Rs.198.00 Lakhs. DST-FIST(197)/2018/580/Institute. Department of Science & Technology. Sanction date: 16.01.2018
3. **Pal, S. K. (PI)** "Integrated Remote Sensing and Geophysical approach for mineral mapping over parts of Dharwar Craton" amounting to Rs. 30.23 Lakhs from the ISRO, DOS, Govt. of India, Bangalore with Ref.No. ISRO/RES/4/630/2016-17, 28-10-2016. IIT(ISM) Ref.No.ISRO(3)/2016-17/493/AGP, Rs.3562000.00, sanction date: 28.10.2016, completion date: 19.02.2021
4. **Pal, S. K**. **(PI) and** Roy, P. N. S. (Co-PI) Project entitled "Geotechnical characterization of Jharia Coal field area using geophysical techniques" amounting to **Rs. 3500000.00 Lakhs** from the DST with Ref. No. SB/S4/ES-640/2012. As intimated vide letter dated 26.02.2014**.** sanction date : 26-12-2013, completion date :27.02.2018
5. Roy, P. N. S. (PI) and **Pal, S. K. (Co-PI),** Seismic Hazard Estimation for Bihar-Jharkhand: Using GPS strain, seismicity and seismic study. **Project sponsored by MOES [MoES/P.O.(Seismo)/1(148)/2012], Project outlay Rs.13978000.0 Lakhs. Sanction date: 5.8.2013;** completion date :**31.03.20.**
6. Shalivahan, Mohanty P.R., Chatterjee Rima, Pal S. K., FIST Program-2010, project sponsored by DST, Project outlay Rs.12000000.00 Lakhs. No. SR/FST/ESI-104/2010 dated 24th December, 2010. **To strengthen the Post-graduate teaching in the area**

of petrophysic in the department of Applied Geophysics. Under this project Electrical Resistivity Tomography equipment with software have been purchased and are being used for research work. Sanction date:24.12.2010; date of commencement : 18.01.2011, Completion date: 16.01.2017,

7. Mohanty P.R., Shalivahan, **Pal S. K.,** Maiti, S. UGC-CAS, **FNo.560/1/CAS/2009/SAP-1, UGC assistance to Department of Applied Geophysics, ISM, at the level of CAS under special Assistance Programme. (ISM grant number UGC(72)/2011-2012/296/AGP)** project sponsored by UGC, Project outlay Rs.8000000.00**. Under this project Electrical resistivity Tomography equipment with software are being purchased. Sanction date:21.04.2011 to Completion date: 31.03.2017.**
8. Vasanta Govind Kumar Villuri, Srinivas Pasupuleti, Soyeb Alam, S.R. Samadder, Anup K Prasad, **Sanjit Kumar Pal,** V.M.S.R. Murthy, Dheeraj Kumar, Sarat Kumar Das 2019, Preparation of Master Plan – 2030 for Dhanbad Municipal Corporation, PROJECT NO : GTG/2019-2020/666/INSTITUTE, Rs. 32,15,000.00, Sanction date:27.6.2019

a. Consultancy project ongoing

1. **Pal, S. K.(CI)**, Datta Gupta S. (Co-CI), and Bhattacharjee R M 2022. Insitu P-wave and S-wave velocity analysis for determination of Physico-mechanical properties of Coal and In-seam Dirt Bands of coal seams/Mines of MCL. Mahanadi Coalfield Limited. Rs. 29,50,000.00. Project No. CONS/7049/2022-23. Sanction date: 14.01.2022
2. **Pal, S. K.(CI)**, and Singh, U.K. (Co-CI), Electrical resistivity tomography for void detection near Thaparnagar Station –MPL Railway. CONS/6037/2020-21. Maithon Power Ltd. Rs.11,80,000.00. Sanction date: 10.07.2020

b. Consultancy project completed

3. **Pal, S. K.(CI)** and Datta Gupta S. (Co-CI) Numerical Modelling of unstable zones of reservoir of LHEP-Stage-I, Seismic Refraction study of unstable zones of Reservoir slope under SJHVN Ltd. ISM Ref. No.: CONS/3872/2018-2019, Total cost: Rs.102,54,200.00. ISM Component 1300000.00 Sanction date: 26.9.2018
4. **Pal, S. K.(CI),** Integrated Geophysical study for groundwater at Karmatand Township of BCCL, BCCL, ISM Ref. No.: CONS/5022/2019-2020, Total cost: Rs.1180000.00, 5.11.2019, start date 03.6.2020
5. **Pal, S. K.(CI)**, Datta Gupta S. (Co-CI), and Singh, U.K. (Co-CI), Electrical resistivity tomography (ERT) and Seismic Refraction Tomography (SRT) for Aquifer study and

fracture zone mapping near Vadodara. No. CONS/0016/2020-21, Rs. 1062000.00. PMT Infrascience Pvt. Ltd., Alambag, Lucknow-226005, UP. 11.12.2020, Completion 8.11.2021

6. **Pal, S. K.(CI),** Multichannel Analysis of Surface Wave at Gaya Medical College., M/s Tar Dona Infra Cons. Pvt. Ltd. ISM Ref. No.: CONS/4085/2018-2019. Total cost: Rs.218000.00, Sanction date: 10.1.19, completion :12.8.19
7. Murthy, V. M. R. S.(CI); Choudhary, B.S.(Co-CI); Sinha R.K.; **Pal, S. K.(Member**), Singh, S.; Panigrahi, D.C.; Scientific Study for Controlling the Ground Vibrations and improving the Dragline productivity in Dudhichua and Nigahi Mines, Singrauli, NCL. ISM Ref. No.: CONS/3417/2016-2017. Total cost: Rs.3500000.00
8. **Pal, S. K.(CI),** Resistivity Imaging study for seepage analysis at Durgawati Dam, Kaimur District Bihar. ISM Ref. No.: CONS/3827/18-19. M/s AIMIL Limited, Total cost: Rs.400000.00; Sanction:9.5.2018; Completion 19.9.2018
9. **Pal, S. K.(CI),** and Mohanty, P. R. (Co-CI) MASW study for Liquefaction potential at IIT Patna, Bihar. ISM Ref. No.: CONS/3826/18-19. M/s AIMIL Limited, Total cost: Rs.236000.00 Sanction:9.5.2018; Completion 19.9.2018
10. **Pal, S. K.(CI),** and Maiti, S. (Co-CI) Hydrological Study at Pakri Barwardih Coal Mine to delineate water saturated and dry formations, Jharkhand. ISM Ref. No.: CONS/3807/18-19. Total cost: Rs.1180000.00 M/s Smartchem Technologies Limited, Mundhawa, Pune-411036. Sanction: 6.3.2018, Completion 9.11.2018
11. **Pal, S. K.(CI),** Maiti, S. (Co-CI) and Datta Gupta S. (member), Hydrological study of ground water in Bera Colliery, Bastacolla, Dhanbad. BCCL, ISM Ref. No.: CONS/3684/17-18. Total cost: Rs.400000.00, Sanction Date: 5.12.2017; Completion :14.8.18
12. Datta Gupta S. (CI), **Pal, S. K.(Co-CI),** Seismic Data Acquisition followed by Processing and Interpretation at Pitampur Area, Indore. ISM Ref. No.: CONS/3547/17-18. Total cost: Rs.493350.00, Sanction date: 8.5.2017, 14.6.2017
13. **Pal, S. K**.(CI), and Mohanty, P. R. (Co-CI), Preliminary Investigation of the IOCL Pipe line at Asansol West Bengal, CONS/3803/2017-2018, National Institute of Rock Mechanics, Rs.30000.00, sanction: 17.3.2017, completion: 31.5.2018
14. **Pal, S. K.(CI),** Singh, Shalivahan(Co-CI), U.K. (Co-CI), and Mohanty, P. R. (Co-CI), 2016. Seismic Refraction Tomography study in Trishuli Galchhi Hydroelectric Project in Nepal. ISM Ref. No.: CONS/3337/2016-17. Funded by M/s EGE Consultant Pvt. Ltd. New Delhi and Siddhakali Power Limited, Katmandu, Nepal. Total cost: Rs.325000.00; 16.09.2016 , 28.06.2018

15. **Pal, S. K.(CI),** Shalivahan(Co-CI), Singh, U.K. (Co-CI), and Mohanty, P. R. (Co-CI), 2016. Geophysical study to get the extent and depth of workings of local seam beneath the Railway acquired land. ISM Ref. No.: CONS/3174/2016-17. Funded by M/s BCCL, CV area, Govt. of India, Total cost: Rs.759316.00, sanction : 29.03.2016 ; Completion: 23.10.19
16. **Pal, S. K.(CI),** Shalivahan, Singh, U.K., and Mohanty, P. R., 2016. Grounder water investigation around Topchanchi under social responsibility program
17. **Pal, S. K.(CI),** Shalivahan(Co-CI), Singh, U.K. (Co-CI), and Mohanty, P. R. (Co-CI), 2016, Electrical Resistivity Tomography for locating of cavity zones around Thapar Nagar. ISM Ref. No.: CONS/3166/2016-17. Funded by M/s Larsen & Toubro Limited RC Maithan Project, Total cost: Rs.682000.00; 20.10.2014; 30.7.2015
18. **Pal, S. K.(CI),** Shalivahan(Co-CI), Singh, U.K. (Co-CI), and Mohanty, P. R. (Co-CI), 2015. Electrical Resistivity Tomography for ground water investigation near Govindpur road, Dhanbad. ISM Ref. No.: CONS/3104/2015-16. Funded by M/s Castron technologies Ltd, Total cost: Rs.50000.00; Sanction: 30.12.2015; completion:27.01.2016
19. **Pal, S. K.(CI),** Shalivahan(Co-CI), Singh, U.K. (Co-CI), and Mohanty, P. R. (Co-CI), 2015. Observation on the reports of wreck site of River Princes at Sinquerim-Candolim Goa. ISM Ref. No.: CONS/3034/2015-16. Funded by Director of Tourism, Govt. of Goa, Total cost: Rs.200000.00, 18.8.2015; 23.11.2015
20. **Pal, S. K.(CI),** Shalivahan(Co-CI), Singh, U.K. (Co-CI), and Mohanty, P. R. (Co-CI), 2015, Cavity detection study for Rail infrastructure around Maithon Power Plant using Integrated Electrical Resistivity Tomography. ISM Ref. No.: CONS/2707/2014-15. Funded by M/s Larsen & Toubro Limited RC Maithan Project, Total cost: Rs.2000000.00; 20.10.2014; 30.7.2015
21. **Pal, S. K.(CI),** Shalivahan, Singh, U.K., and Mohanty, P. R., 2013, Electrical Resistivity Imaging and Self Potential survey for locating of fracture zones and seepage analysis at Talabiria-I Coal mines, Sambalpur, Orissa, ISM Ref. No.: CONS/1932/2013-14. Funded by M/s AGE Consulting, New Delhi. Total cost: Rs.630002.00 ; sanction: 18.10.2013; completion: 01.05.2014
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75. Rani K, Guha A, Pal SK, Kumar KV 2018 Broadband reflectance, emittance spectroscopy and self-potential geophysical survey for targeting gold sulphide lode deposit in Bhukia, Rajasthan, India, **Geocarto International**, 35(1),93-112. **Impact factor: 3.8, Q2**
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77. **Pal, S. K.,** Vaish, J., Kumar, S., Priyam, P., Bharti, A. K. and Kumar R., 2017. Downward continuation and Tilt Derivative of magnetic data for delineation of concealed coal fire in East Basuria Colliery, Jharia coal field, India. **J. Earth Syst. Sci**. 126(53), 1-17. DOI 10.1007/s12040-017-0826-y. **Impact factor : 1.912, Q3.**
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80. Satya Narayan, Soumyashree Debasis Sahoo, S. K. Pal, Ujjawal Kumar, Vipin Kumar Pathak, and T. J. Majumdar and Avinash Chouhan, 2017. Delineation of structural features

over a part of the Bay of Bengal using total and balanced horizontal derivative techniques. **Geocarto International** 32(1), 1-16, DOI: http://dx.doi.org/10.1080/10106049.2016.1140823; **Impact Factor: 3.8, Q2**

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b. National Journal

1. **Pal S. K.,** Bhattacharya, A. K., and Majumdar, T. J., **2006.** Geological interpretation from Bouguer gravity data over the Singhbhum-Orissa Craton and its surroundings: A GIS approach. **Journal of Indian Geophysical Union**, 10(4), 313-325.
2. **Kumar**, Sahadev; Maurya, Ved P.; **Pal S. K.**; Shalivahan and Srivastava, Prateek, **2014**. Tipper Magnitude: A possible Indicator of Anomalous Conducting Zone. **Association of Exploration Geophysics**, 35(2), 83-87.
3. **Pal S. K.,** Ranjan, S.K., Kumar Rajwardhan, Yadav R.K., Singh K K K. **2015.** Utilization of Multimode Surface Wave Dispersions for Improving of Shallow Surface Characterization. Special publication, Journal of Engineering Geology (ISN: 0970-5317), 61-64.
4. Bharti A.K., **Pal S.K.,** Priyam Piyush, Narayan Satya, Pathak, V. K., Sahoo, S.D., **2015,** Detection of Illegal Mining over Raniganj Coalfield using Electrical Resistivity Tomography. Special publication, Journal of Engineering Geology (ISN: 0970-5317), 65-69.
5. Kumar Sahadev, **Pal S.K.,** Vaish, J., Shalivahan, 2015, Utilization of Magnetic Gradient Method for Coal Fire Mapping of Chatabad Area, a Part of Jharia Colafield, India. Special publication, Journal of Engineering Geology (ISN: 0970-5317), 170-176.

c. International conference proceedings

1. Chouhan, Avinash Kumar, Choudhury Pallabee and **Pal, Sanjit Kumar** 2020. Evidence of shallow lithosphere and crust in the western continental margin of India through modeling of gravity data. 22nd EGU General Assembly, held online 4-8 May, 2020, id.316, 2020EGUGA..22..316C
2. Singh P., **Pal S.K.** and Kumar S. 2019. Inversion of Self Potential Anomaly for Coal Seam Fire Prediction Using Genetic Algorithm. 81st EAGE Conference and Exhibition 2019, Jun 2019, Volume 2019, p.1 – 5, https://doi.org/10.3997/2214-4609.201901125
3. Bharati AK, Singh KKK, Prakash A, **Pal SK**, Verma A, Singh PK, 2018. Mapping of Cavity Using Electrical Resistivity Tomography, 24th European Meeting of Environmental and Engineering Geophysics
4. Gupta RK, Agrawal M, Pal SK, Srivastava S, Kumar R, 2018. through Joint Analysis of MASW and Microtremor data in Dhanbad, Jharkhand, India, AGU Fall Meeting Abstracts. 2018AGUFM.S23C0544G
5. Sarkar P, Singha Roy PN, **Pal SK**, 2018. Seismicity and stress field variations across the North East India: A finite element modelling approach, AGU Fall Meeting Abstracts
6. Hajra S, Hazarika D, Bankhwal M, Kumar N, **Pal SK**, Singha Roy PN, 2018. Average Crustal Thickness and Poisson's Ratio Beneath a Broadband Seismological Profile Along the Kali River Valley, Kumaon Himalaya, AGU Fall Meeting Abstracts
7. **Pal SK**, Kumar S, Bharti AK, Pathak VK, Kumar R, **2016.** Electrical Resistivity Tomography for coal fire mapping over Jharia coal field, India, American Geophysical Union, Fall Meeting 2016, abstract #NS33B-1954.
8. Rajkumar T, Pal SK, **2016.** Inversion of Reflected Travel Time Curve Using a Continuous Genetic Algorithm, 78th EAGE Conference and Exhibition 2016
9. Bharti A K, **Pal S K,** Ranjan S K, Priyam P, Pathak V K (2016) Coal Mine Cavity Detection Using Electrical Resistivity Tomography: A Joint Inversion of Multi Array Data. 22nd European Meeting of Environmental and Engineering Geophysics, EAGE, held in Barcelona, Spain. DOI: 10.3997/2214-4609.201602084.
10. Singh, B.B.; Srivardhan, V.; **Pal, S.K.** ; Kanagaraju, S.K.; Kumar S. and Vaish J., 2015, Particle Swarm Optimization Inversion of Self Potential Anomaly for Detecting Coal Fires, a Case Study - Jharia Coal Field. Third Sustainable Earth and Sciences conference in Celle, Germany, EAGE, DOI: 10.3997/2214-4609.201414282
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13. **Pal, S. K.** and Majumdar, T. J., 2013, High resolution EIGEN-6C2 gravity data for geological appraisal over the Singhbhum-Orissa Craton, India, International Conference on Future Challenges in Earth Sciences for Energy & Mineral Resources, Department of Applied Geology, ISM Dhanbad, November 14-16, 2013.
14. Vaish, J., and **S. K. Pal,** 2013, Interpretation of Magnetic Anomaly data over East Basuria region using an Enhanced Local Wavenumber (ELW) Technique, 10th Biennial International Conference & Exposition, Kochi, P11, Society of Petroleum Geophysicists (SPG). spgindia.org/10_biennial_form/P110
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16. **Pal, S. K**. and Majumdar, T. J., 2012, Geological appraisal of the 85oE Ridge, Bay of Bengal using GRACE and GOCE anomaly, First International GOCE Solid Earth Workshop, University of Twente, Netherlands, 16-17 October 2012, 33-34.
17. **Pal, S. K.,** Bhattacharyya, R., Majumdar, T. J. and Bhattacharya, A. K., 2007. Geological interpretation of Bouguer gravity anomaly map over Singhbhum shear zone: a vertical derivative approach. International Conference on "Current Trends in Remote Sensing and GIS (CTRGA 2007)" at IIT, Kharagpur during Feb. 15-17, 2007 (Proc. Abs. p. 40).
18. Bhattacharya, A. K., Srivastava, P. K., and **Pal, S. K.,** 2004. Change Detection Analysis of Eastern Coastal Zone of India using Satellite Remote sensing Data and GIS, International Conference on Remote Sensing & GIS for Envir**onmental Studies, Germany**, October, 7-8. Gottinger Geographische Abhandlungen 13, 10-15

d. Papers in conference proceedings

1. Rajat Sanyal and **Sanjit Kumar Pal** 2017, Presented a paper on Recent Archaeological Investigations at Asuralay (District Birbhum, West Bengal)", at the International symposium on Recent Field Researches and Scientific Studies in Indian Archaeology, during the Joint Annual Conference of the ISPQS, IAS and HCS, held at the Banaras Hindu University, in November 2017.
2. **S. K. Pal et al. 2017, Depth estimation of subsurface coal fire over part Jharia coal field using magnetic method**, 39 Annual convention of AEG, at BHU, Varanasi, October 5-7, 2017.

3. **S. K. Pal, 2018** Mapping of coal mine cavities and coal fire fronts over Raniganj and Jharia coalfields using integrated Geophysical techniques, ETGRMI 2018 APPLIED GEOPHYSICS IIT(ISM), March 9-11,2018.
4. Saurabh, S.K. Pal, Piyush Priyam, Rajwardhan Kumar and Vipin K. Pathak 2016, Application of Seismic Refraction Tomography to delineate subsurface cavity : A case study in Jharia Coalfield region. 1st Triennial Congress of FIGA, 53rdAnnual Convention of IGU & 34th Annual Convention of AHI on "Geosciences for Sustainability "at Indian School of Mines, Dhanbad, November 8-10, 2016.
5. Rajwardhan Kumar, Abhay Kumar bharti, Piyush Priyam, Saurabh And S K Pal 2016, Application of electrical resistivity tomography for delineation of underground mine goaf in Jharia coal field. 1st Triennial Congress of FIGA, 53rdAnnual Convention of IGU & 34thAnnual Convention of AHI on "Geosciences for Sustainability "at Indian School of Mines, Dhanbad, November 8-10, 2016.
6. Subhendu Mondal, Arindam Guha, **Sanjit Kumar Pal,** Biswajit Ghosh, K. Vinod Kumar. Synergistic use of ground magnetic data, laboratory spectroscopy, Landsat 8 derived spectral map to delineate rock types of Sitampundi layered complex, Tamilnadu, India. ISRS-ISG National Symposium, IIRS, Dehradun, 7-9 December, 2016.
7. Rajesh S., John P Pappachen, and **S K Pal**. 2016, **Near** and far field co-seismic offsets of 25th April 2015 Mw 7.8 Nepal earthquake from continuous GPS data" at 53rd Annual convention of **Indian Geophysical Union(IGU)** held at Indian Institute of Technology (IIT-ISM) Dhanbad during November 8-10,2016
8. A.K. Chouhan, S.V. Rao, R.K. Singh, N. Kumar, P. Choudhury, **S.K. Pal,** & B.K. Rastogi, 2016, New insight of crustal structure of cambay basin by 2.5D gravity modelling. 38th annual convention Seminar and Exhibition on Exploration Geophysics, Association Exploration Geophysics , 20-22 October, Hyderabad.
9. Vipin Kumar Patahk and **S.K. Pal,** Appraisal of surface geology and subsurface structural features over Singhbhum-Orissa Craton, India using high resolution EIGEN6C4 gravity data. Developments in Geosciences in the Past Decade – Emerging Trends for the Future and Impact on Society" 58th Annual General Meeting of the Geological Society of India, IIT Kharagpur, 21-23 October, 2016
10. **S. K. Pal**, Sahadev Kumar, Piyush Priyam, Saurabh Srivastava and Subhendu Mondal, **2016,** Subsurface Coal fire mapping using geophysical methods: some case studies over Jharia coalfields, India. Developments in Geosciences in the Past Decade - Emerging trends for the future & Impact on society and 58th AGM of Geological Society of India. Department of Geology & Geophysics, IIT Kharagpur from 21-23 October 2016.

11. Sahadev Kumar, **S. K. Pal,** Shalivahan Srivastava, D.C. Panigrahi, Saurabh Srivastava and Jitendra Vaish, 2016. **Delineation of conceal Coal fire over Jharia coalfield, India.** National Seminar on Environment and Development in Eastern India(status, Issues & Challenges) during 17-18 December, Ranchi, Ranchi University.
12. Satya Narayan, Vipin Kumar Patahk, T.J. Majumdar, **S.K. Pal,** Ujjawal Kumar and Saurabh. 2016. Utilization of GECO global gravity data and edge enhancement technique in delineation of structural features over parts of 85^0E ridge. 1st Triennial Congress of FIGA, 53rdAnnual Convention of IGU & 34thAnnual Convention of AHI on "Geosciences for Sustainability "at Indian School of Mines, Dhanbad, November 8-10, 2016.
13. Piyush Priyam, **S.K. Pal**, Vipin K. Pathak. Rajwardhan and Saurabh, 2016. Application of Electrical Resistivity Tomography and Seismic Refraction tomography for exploration and identifying nature of massive and fractured Basalts over Birbhum district, West Bengal India. 1st Triennial Congress of FIGA, 53rdAnnual Convention of IGU & 34thAnnual Convention of AHI on "Geosciences for Sustainability "at Indian School of Mines, Dhanbad, November 8-10, 2016
14. Pathak V.K., Narayan S., Kumar Ujjawal, Goswami O.P. and **Pal S.K., 2015,** Structural mapping over Singhbhum-Orissa Craton, India using high resolution EGM2008 gravity data and in situ gravity data. 52nd Annual Convention of IGU, NCAOR, Goa during 3-5 November, 2015.
15. Kumar Rajwardhan, Bharti, A.K. Kumar Sahadev and **Pal S.K., 2015,** Delineation of Underground cavities Using Electrical Resistivity Tomography (ERT) method. 52nd Annual Convention of IGU, NCAOR, Goa during 3-5 November, 2015.
16. Priyam P., and **Pal S.K., 2015**, Interpretation of Bouguer gravity data by spectral analysis and downward continuation, over parts of Rajmahal trap area. 52nd Annual Convention of IGU, NCAOR, Goa during 3-5 November, 2015.
17. Singh Rashmi and **Pal S.K, 2015,** Detection of coal fire zone in Patherdih Colliery, Dhanbad using magnetic modeling. 52nd Annual Convention of IGU, NCAOR, Goa during 3-5 November, 2015.
18. Ranjan S. K., Yadav R.K. and **Pal S.K, 2015**, Near surface characterization using multi modes of love wave. 52nd Annual Convention of IGU, NCAOR, Goa during 3-5 November, 2015.
19. Bharti, A.K., **Pal, S.K.,** and Jitendra Vaish, **2014,** Applic**ation** of Self-potential method for coal fire detection over Jharia Coal field, ***Indian Geophysical Union, 19 - 21 November, 2014,*** Kurukshetra University, Kurukshetra, p59-62.

20. Ranjan, S.K. and **Pal, S.K. 2014,** Characterization of shallow structure by MASW technique using multimode surface wave dispersion. ***Indian Geophysical Union, 19 - 21 November, 2014,*** Kurukshetra University, Kurukshetra, p161-164.
21. Piyush Priyam, **Pal, S.K.** and Maurya, Ved P., **2014** Delineation of inter-trappean basalts and possible coal seams over Birbhum District, West Bengal. ***Indian Geophysical Union, 19 - 21 November, 2014,*** Kurukshetra University, Kurukshetra, p152-133.
22. Gupta Sandeep Kumar, and **Pal, S.K.,** 2014, Digital image enhancement of Singhbhum Shear Zone and sorroundings using Landsat ETM+ data. ***Indian Geophysical Union, 19 - 21 November, 2014,*** Kurukshetra University, Kurukshetra, p195-196.
23. **Pal, S. K.** and Vaish, J., 2014, Coal fire mapping of East Basuria, a part of Jharia colafield, India: a magnetic gradient approach 6th National Seminar on Surface Mining (NSSM) on January 10-11, 2014.
24. **Pal, S. K.** and Vaish, J., **2013**, Magnetic method of investigation for Coal fire mapping of East Basuria Colliery, a part of Jharia cola field, India, XIII convention of Mineralogical Society of India, 20th – 21st March 2013, **University of Mysore, Department of Studies in Earth Science, Manasagangotri, Mysore, India**.
25. **Pal, S. K.** and Majumdar, T. J., **2012,** Utilization of GRACE gravity data for geological interpretation over a part of the Singhbhum Shear Zone, ***49th annual convention on" towards the energy security - exploration, exploitation and new strategies", Indian Geophysical Union, 29 - 31 October, 2012, Gandhinagar.***
26. Vaish, J., and **S. K. Pal, 2012,** Geological appraisal of Jharia coalfield using GRACE gravity data, ***49th annual convention on "towards the energy security - exploration, exploitation and new strategies", Indian Geophysical Union, 29 - 31 October, 2012, Gandhinagar.***
27. Vaish, J., and **S. K. Pal, 2012,** Geotechnical characterization of a part of Jharia coal field using Refraction Micro Tremor method**, National** ***workshop "Engineering Geophysics for civil engineering and Geo-Hazard" 22-23 November 2012, CSIR-CBRI, IIT Roorkee*****.**
28. Rahut, A.K. and **Pal, S.K., 2008.** Contour mapping and Terrain Analysis using SRTM data: a case study of dam area, Dibang Multipurpose Project, Arunachal Pradesh, India. *Challenging in Engineering Geology*, **Indian Society of Engineering Geology** *, 03-05 December 2008, Hydrabad, India*.
29. Kapil, S. L., Jyotirmoy and **Pal, S.K**., **2007**. Combined Approach of Seismic Refraction and Resistivity Imaging in Geotechnical Exploration: A Case Study. ***Silver Engineering Experiences and Practices*****, CSMRS, New Delhi,** May 18 & 19, Paper No. NP-114.
30. **Pal, S. K**., Majumdar, T. J., and Bhattacharya, A. K., **2005**. Utilization of MODIS Multispectral Thermal Infrared Data over Singhbhum–Orissa Craton: A MNF Transform Approach. ***Workshop on MODIS data utilization*** **at SAC** during April 19-20, 2005.
31. Srivastava, P.K., **Pal**, **S.K.** and Bhattacharya, A.K., **2002**. An Integrated Remote Sensing and Geophysical Methods for Ground Water Prospecting in a Hard Rock Area. ***39th Annual Convention Meeting of National Geophysical Union*****, NEERI, Nagpur 4th-6th Oct 2002.**

- **Membership Of Professional Bodies/Organizations**

1. Indian Geophysical Union: Life Member (**L-3235)**
2. Indian Society of Engineering Geology: Life Member
3. Association of Exploration Geophysicists: Life Member
4. Indian Society of Remote Sensing: Life Member
5. Geological Society of India: Life Member (3296)

- **International Collaboration:**

1. Dr. Amin Beiranvand Pour, Institute of Oceanography & Environment (INOS), Higher Institution Center of Excellence (HICoE) in Marine Science, University Malaysia Terengganu (UMT), 21030 Kuala Nerus, Terengganu, Malaysia.
2. Dr. Saumitra Misra, Department of Geology, School of Agricultural, Earth and Environmental Sciences, Room No. 123, University of KwaZulu-Natal, Private Bag X54001, Durban 4000, South Africa.
3. Dr. Snehamoy Chatterjee, Department of Geological and Mining Engineering and Sciences, Michigan Technological University , 1400 Townsend Drive; 601 Dow Building, Houghton, MI 49931, USA
4. Prof. Manoj Mukhopadhyay, Dept. of Applied Physics, PNG University of Technology, Morobe Province, Lae, Papua New Guinea. Phone:+675 4734913.

- **Institute responsibility**
  1. **Head of the Department of Applied Geophysics, IIT(ISM) w.e.f. 17.08.2022**
  2. **DPGC member 2020 to August 2022**
  3. **In-charge of Winter Geophysical Field Training, 2018-19**
  4. **In-charge of research scholars for AGP 2012 to 2016**
  5. **DPGC Convener 2019 to 2020**
  6. **Member of M.Sc. /M.Sc. Tech. of Admission Committee from 2013 to 1018**
  7. **Coordinator**, **M. Tech. (Earthquake Science and Engineering) w.e.f. 4.12.2017 to till date**
  8. **Time-Table in-charge since 2012 to December, 2018**
  9. **DSC member of different PhD students of Geology, Math, Civil, Mining, Env. Sc. Departments**
- **Co-curricular activities**
  1. **Testimony issue to the students for internship, PhD Position, Projects etc in India and abroad**
  2. **Review of international SCI journals**
- **Experience in research / consultancy project**
- **EDP Courses:**

1. As a staff "24 weeks Intensive course on rock Mechanics in Hard Rock Mining (for HZL, Vedanta)"
2. As a staff "Executive Development on Advances in Drilling, Blasting and Mechanical Excavation Techniques for improved Safety and productivity in Coal Mines."

3. As a staff "Geo-electrical methods for near surface geophysics, "ROCK MECHANICS IN HARD ROCK MINING" 06, 2014 to March 28, 2014."
4. As a staff "Conventional and Nonconventional Geophysical Methods for Engineering Geophysical Investigations of Hydroelectric Projects "Importance of Survey & Investigation in Hydropower Projects for NHPC Executives". March, 18 to 21, 2013."
5. As a staff "Geophysical field training in "Geo Technical Engineering and Soil Mechanics" June 3rd to12th, 2013, for DRDO officers"

- **List of software purchased using R&D project/IIT(ISM) funds**

Sl. No.	Name
1.	Reflexw Complete 2D/3D academic
2.	WinMASW Academy Software
3.	Geomotions suite Basic academic software
4.	WinGlink License including Modules
5.	Rayfrsc Software
6.	Seis Opt Rami Software
7.	TNT mips Version 2014
8.	Galena software
9.	ArcGIC Master Lab
10.	ERT lab 3D Software
11.	Edukit (Erdas Imagine)

- **List of instruments purchased using R&D project/IIT(ISM) funds**

Sl. No.	Items of Stores
1.	1D Resistivity meter Details: 2 Nos. IGIS
2.	Direct reading Digital Resistivity meter Model: DDR-3
3.	2Hz Vertical Geophones Geospace HS-1LT
4.	1)Seis- Mod PRCSR 16 K Tested 2)Seis-Mod Analog PGB Tested
5.	Low frequency geophone and seismograph
6.	1)Geophone RTC- 4.5 Hz Vertical 2) Geophone RTC- 4.5 Hz Horizontal
7.	Resistivity Imaging System Electrode
8.	Manual cable storage reel
9.	GDP-32 II Front Panel including accessories
10.	Digital Seismograph, 24 channel (Seismic GEODE)
11.	Electrically Operated Hammer Source
12.	Surface Electronics, Winches, Cable And Cable Heads, Logging Sonde And Calibrated Accessories
13.	Magnetometer with VLF
14.	Direct Shear Apparatus ,2KN With Dial Guage 02 Nos

15.	Satandard penetration test (SPT) set consist of AIM
16.	Static cone penetrometer 30 KN(3000 kgf) capacity hand operated
	Split Spoon sampler with Brass lines 50.8mm OD and 35 mm ID
17.	Drill Rod ,1m Long with Adaptor
18.	GDD Sample core IP Tester , Core drill(electrically operated), Portable dore drill (03 NOS)
19	Time domain induced polarization setup Tipix Elereepro
20	96 electrode ERT system
21	24 unit wireless Seismograph
22	200 MHz GPR

- **Familiar with Technical Software:**
  1)Geotools, **2)**MTEDITOR, **3)** SSMT200, **4)** Geosoft, **5)** Surfseis, **6)** SeisImager, **7)**RES2DINV, **8)** SeisOpt@2D 3.0, **9)** SeisOpt ReMi 4.0, **10)** GeoTom CG, **11)** Divine 3.11, **12**) Winseism, **13)** BlastWare, **14)** ERDAS Imagine 9.0, **15)** ARCGIS 9.0, **16)** ENVI 4.0, **17)**MATLAB, **18)**Seisan 8.1.3, **19)** Autocad2004 etc. **20) Rayfract® software, 21)Geomotions Suite Basic**, 22) **winMASW, 23) REFLEXW complete 2D/3D, 24) Geosoft, 25)** RES2D/3D Inversion

- **Instrument Handled:**
  1)FlashRES Universal 61-Channel 64 Electrode, **2)** Magnetometer GSM-19TG, **3)** AMT MTU-5A, **4)** Stratavizor-NZ / GEODE, **5)** IGIS DDR-2, **6)** Terraloc MK6, **7)** Terrameter SAS300C, **8)** Terrameter SAS 4000, ES 464 LUND, **9)** Borehole Sparker P-Wave Probe SBS-42, Impulse Generator, 3D Borehole Geophone, **10)** BlastMate **11)** Broadband Seismometer Guralp CMG40T, **13)** Geotech S13J Shotperiod Seismometer, **14)** 130 Accelerometer, **15)**130 Reftek Digital Recorder, etc. , 16) TIPIX 3000 IP , 18) Syscal R1 Plus, 19) **Well Logging, 20)Geode 24 Channel Digital Seismograph, 21)** IGIS DDR-2 resistivity meter,

- **INDUSTRIAL EXPERIENCE:**
  About EIGHT YEARS INDUSTRIAL EXPERIENCE IN NHPC LIMITED (Service certificate, enclosed) in Engineering Geophysics and Geotechnical investigation

- **Highlights of Industrial research works:**

A. Running and maintenance, data acquisition and processing of six Micro Earthquake station and one Accelerograph station around Subansiri Lower HE Project.

B. Geotechnical Instrumentation for monitoring and implementation of Hydroelectric projects: (MPBX, SPBX, Load cell, Inclinometer, Tape Convergence, Topographic Marker, Inverted Pendulum, Tendon, Piezometer, Rock Anchoring, Stress Meter, Strain Meter, Temperature Meter).

C. EIGHTEEN TECHNICAL REPORTS ON GEOPHYSICAL INVESTIGATION for Hydroelectric Project (Internal Geophysical Report prepared and submitted to NHPC Limited, Sector-33, Faridabad, India) as detail below:

1. Kapil, S.L., Jyotirmoy, **Pal, S.K.,** and Khanna, P., 2011, Geophysical survey involving MASW and ReMi Technique for assessment of rock mass characteristics of Swazye Hydroelectric Project, Myanmar (Unpublished report, NHPC Limited).
2. Nagar, V., **Pal, S.K.,** and Sen, A., 2011. Ultrasonic Velocity measurement study on rock core samples for determining dynamic elastic parameters for Chamkharchu-I HE Project, Bhutan. GEOPHYSICAL REPORT NO. NH/EG/GEOPHY/144.
3. **Pal, S.K.,** Nagar, V., and Sen, A., 2011. Report on Geophysical Resistivity survey for sitting of tube well in Semna Colony, Dulhasthi Power Station. GEOPHYSICAL REPORT NO. NH/EG/GEOPHY/143.
4. Nagar, V., **Pal, S.K.,** and Sen, A., 2011. Report on Geophysical Resistivity survey for sitting of tube well in NHPC Office Complex, Faridabad. GEOPHYSICAL REPORT NO.NH/EG/GEOPHY/141.
5. **Pal, S.K.,** and Jyotirmoy, 2010. Report on Resistivity study for Ground water survey at Loktak HE Project, 2010.
6. **Pal, S.K,** Jyotirmoy and Murgapan, S., 2009. Report on Geophysical survey involving seismic refraction and resistivity imaging, Tawang H.E. Project (Stage-I and stage-II), Arunachal Pradesh. GEOPHYSICAL REPORT NO. NH/ED/SBP/GEOPHY/26, 2009.
7. **Pal, S.K., 2009**. Final report on Earth Resistivity measurements for design of Earthmat at Dam foundation Subansiri Lower H.E. Project, March 2009.
8. **Pal, S.K.,** 2009. Final report on Earth resistivity measurements for design of Earthmat at Intake-I and Intake-II foundations, Subansiri Lower H. E. Project, February 2009.
9. Kapil, S. L., Jyotirmoy, **Pal, S.K.,** Giri, T.V., 2007. Report on Geophysical survey involving seismic tomography, seismic refraction and resistivity imaging, Tawang H.E.

Project (stage-II), Arunachal Pradesh. GEOPHYSICAL REPORT NO. NH/ED/SBP/GEOPHY/25, July 2007.

10. Kapil, S. L., Jyotirmoy, **Pal, S.K.,** Giri, T.V., 2007. Report on Geophysical survey involving seismic tomography, seismic refraction and resistivity imaging, Tawang H.E. Project (stage-I), Arunachal Pradesh. GEOPHYSICAL REPORT NO.NH/ED/SBP/GEOPHY/24, July 2007.
11. Kapil, S.L., Jyotirmoy, and **Pal, S.K.,** 2006, TLDP-IV, Resistivity Imaging survey for ground water mapping and groutability verification GEOPHYSICAL REPORT NO. NH/ED/SDBP/GEOPHY/23, 2006.
12. Kapil, S.L., Jyotirmoy, and **Pal, S.K.,** 2006.TLDP-III, Resistivity Imaging survey for land sliding mapping, GEOPHYSICAL REPORT NO. NH/ED/SDBP/GEOPHY/22, 2006.
13. Kapil, S.L., Jyotirmoy, and **Pal, S.K.,** 2006. Report on seismic tomography scanning for assessment of rock mass characteristics of dam site area Kotlibhel HE Projects (Stage-II) Uttaranchal, NHPC, GEOPHYSICAL REPORT NO. NH/ED/SDBP/GEOPHY/21, MAY 2006.
14. Kapil, S.L., Jyotirmoy, and **Pal, S.K.,** 2006. Report on seismic tomography scanning for assessment of rock mass characteristics of dam site area Kotlibhel HE Projects (Stage-IB) Uttaranchal, NHPC, GEOPHYSICAL REPORT NO. NH/ED/SDBP/GEOPHY/20, MAY 2006.
15. Kapil, S.L., Jyotirmoy, and **Pal, S.K.,** 2006. Report on Geophysical survey involving seismic tomography, seismic refraction and resistivity imaging Siang Lower HE Project (I-site) Arunachal Pradesh. NHPC, GEOPHYSICAL REPORT NO. NH/ED/SDBP/GEOPHY/19, March, 2006.
16. 15. Kapil, S.L., **Pal, S.K.,** and Jyotirmoy, 2005. Report on shear wave velocity measurement at Lower Siang (I-Site) H.E. Project, Arunachal Pradesh. NHPC, GEOPHYSICAL REPORT NO. NH/ED/SDBP/GEOPHY/17, December, 2005, p1-9.
17. Jyotirmoy, **Pal, S.K,** and A.Sen, Report on Geophysical investigation at alternate Dam sites (Site-I and Site-K), Lower Siang HE Project, Arunachal Pradesh. NHPC, GEOPHYSICAL REPORT, January, 2005, p1-7.
18. Kapil, S.L., **Pal, S.K.,** 2005. Report on shear wave velocity measurement at Dibang multipurpose project Arunachal Pradesh. NHPC, GEOPHYSICAL REPORT NO. NH/ED/SDBP/GEOPHY/16, December, 2005, p1-8.

- **Laboratories developments, Installation and maintenance of Software/Instruments in NHPC:**

1. Execution of Deep Seismic reflection survey for Hydroelectric Project, NHPC Limited, 2010-2011
2. Purchase and installation of ReMi^{TM} 1D/2D S-Wave modeling software, 2010-2011,Subansiri Lower HE Project, NHPC Limited
3. Repairing of broad band Seismometer, Short Period Seismometer, Digital data recorder and renovation of six Micro earthquake station, Purchase and Installation of GPS, Solar panel , industrial Battery, Data card and new Digital data recorder broad band Seismometer, Accelerometer etc., 2007-2011.
4. Repairing and maintenance of Geophysical Survey equipments: Terraloc MK6, Terrameter SAS300C, Terrameter SAS 4000, ES 464 LUND, Borehole Sparker P-Wave Probe SBS-42, 2004-2006

- **Past Research work**
  1. **Worked as SRF in a Research Project:** Majumdar, T. J., Bhattacharya, A. K. , **Pal, S. K.,** Srivastava, P. K., and Bhattacharyya, R., 2011. Usage of MODIS Multichannel Thermal IR data for targeting specific mineralized areas in Singhbhum Shear Zone: A Joint project between SAC (ISRO) and IIT (Kharagpur), funded by ISRO.
  2. **PhD Completed:** P**al, S.K.,** 2009, A Geographical Information System based integrated study of Remote sensing and Gravity data for geological appraisal of parts of Singhbhum-Orissa Craton, India. Ph.D. dissertation submitted in the Department of Geology and Geophysics, IIT Kharagpur, India.
  3. **M.Sc.Tech. dissertation: Pal, S.K.,** 2001, Geoelectrical Sounding study for locating suitable groundwater Zone in the eastern part of Sheoganj Block, Sirohi District, Rajasthan. M.Sc.Tech. dissertation submitted in the department of Geophysics, Banaras Hindu University.