

International Research Centre of Nanotechnology for Himalayan Sustaiability (IRCNHS)

Focus of Centre:

SDG 3: Good Health and Well-being, SDG 6: Clean Water and Sanitation SDG 11: Sustainable Cities and Communities

Vision: To facilitate advanced research in various fields of Science & Technology at Nanoscale leading to the development of innovative products for societal benefits especially environmental remediation.

Mission:

- 1. To support responsible development of nanotechnology
- 2. To support the fabrication of sustainable materials for the benefits of nanotechnology to the environment and human health and safety.
- 3. To synthesize and develop a new generation of multifunctional nanomaterials having some societal value and benefit almost every sector of technology.
- 4. Corporate sustainability in the responsible development of nanotechnology.

Location: F Block

Year of Establishment: 2018

Faculty In-charge: Dr. Guarav Sharma

Members: Dr Amit Kumar, Dr Dinesh Chatanta, Dr Pankaj Raizada

No. of Publications in following SDGs (2018-2023):

Name of SDG	No. of Publications
SDG 3: Good Health and Well-being	516
SDG 6: Clean Water and Sanitation	253
SDG 11: Sustainable Cities and Communities	31

Extracted from Scopus database

This centre was established to enhance advanced research in nanotechnology and create state-ofthe-art facilities for nanotechnology research. In keeping with the central purpose of Himalayan Biodiversity that remains a key focus for Shoolini University, here also there is a special relevance to water purification, materials synthesis for applications in defense, biomedical and communication engineering. The centre was established to promote interdisciplinary research



among different faculties. It was formally inaugurated by Hon'ble Justice Swatanter Kumar, Chairperson, and National Green Tribunal on 31st January 2016.

Thrust Areas: Research Centre in Nanotechnology is a fully dedicated Innovation centre for the synthesis of nanostructures such Nanotube, Nanofibers, Nano-roads, and carbon quantum dots for various energy harvesting applications like multi-layer ceramics capacitors, hybrid nanomaterials for environmental remediation, Nanogenerator, Sensors and Supercapacitors.

Research Collaborations/MoU's

Following are the collaborators of "Himalayan Centre of Nanotechnology"

National:

- Guru Nanak Dev University, Amritsar, Punjab, India
- ✤ Aligarh Muslim University, UP, India
- ✤ CSIO-CSIR Lab Chandigarh, India
- Himachal Pradesh University, Shimla, India
- Chandigarh University, Chandigarh, India
- University of Gujrat, Gujrat, India
- Indian Military Academy, Dehradun, India
- JP University, Himachal Pradesh, India
- Jawaharlal Nehru University, New Delhi, India

International:

- * King Abdullah Institute of Nanotechnology, King Saud University, Saudi Arabia
- University of Pannonia, Veszprem, Egyetem, Hungary

Research Projects:

S. No	Торіс	PI/ Co-PI	Year	Agency	Funding
1	Fabrication and characterization of substrate for patch antenna by using nano magneto-dielectric materials for the	Dr. Atul Thakur (PI) Dr. Preeti Thakur (Co. PI)	2012-2014	DRDO	₹ 9,90,000



	missile applications				
2	Nano magneto- dielectric materials for high frequency applications	Dr. Atul Thakur (PI)	2012-2015	DAE	₹ 17,24,000
3	Synthesis and characterization of nano-ferrites for the development of radar absorbing materials	Dr. Preeti Thakur	2014-2017	DST	₹ 21,72,000
4	Efficiency improvement of packed bed solar thermal energy storage using different fin shapes on absorber plate in solar air collector	Dr. Rajesh Kumar (PI), Dr. Anil Kumar (Co-PI)	2019-2020	HIMCOSTE	₹ 6,50,000
5	UK-India Educational and Research Partnership to Develop Industrially Focused Curriculum in Advanced Manufacturing Technology	Dr. Pankaj Thakur, Dr. Rajesh Kumar	2016-2019	Royal Academy of Engineering	₹ 40,06,718
6	Development of Lead- free piezoelectric nanofibers via Electrospinning for piezoelectric energy harvesting	Dr. Radheshyam Rai, Dr. Virender Pratap Singh	2015-2018	DRDO	₹ 2,690,000
7	Solar Steam Cooking	Dr. Munish Sethi, Dr. Rajesh	2012-2015	MNRE	₹ 25,60,192



8	 Photovoltaic behaviour of rare-earth doped bismuth ferrite nano fibers for potential application in perovskite solar cells 	Dr. Mamta Shandilya	2021-2022	HIMCOSTE	₹ 4,90,000	
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Patents Filed:

Inventors	Patent filing	Date of filing
	number	
Atul Thakur, Preeti	201611013315	April 16, 2016
Thakur		
Atul Thakur, Preeti	201611018053	May 25, 2016
Thakur		
Atul Thakur, Preeti	201611022599	June 30, 2016
Thakur, Kush Rana		
Virender Pratap Singh,	201711034816	September 29,
Gagan Bhargava, R.K		2017
Kotnala, Mahavir Singh		
Dr. Mamta Shandilya,	201811030271	August 12, 2018
Dr. Shweta Thakur, Dr.		
Radheshyam Rai, Dr.		
Rajesh Kumar		
Dr. Rajesh Kumar, Er	201811031068	August 20, 2018
Ankit Gupta, Prof. Raja		
Sekhar Y, Prof SS		
Chandel		
Dr. Rajesh Kumar,	201811031209	August 21, 2018
Ankush Chauhan, Ritesh		
	Atul Thakur, PreetiThakurAtul Thakur, PreetiThakurAtul Thakur, PreetiThakurAtul Thakur, PreetiThakur, Kush RanaVirender Pratap Singh,Gagan Bhargava, R.KKotnala, Mahavir SinghDr. Mamta Shandilya,Dr. Shweta Thakur, Dr.Radheshyam Rai, Dr.Rajesh KumarDr. Rajesh Kumar, ErAnkit Gupta, Prof. RajaSekhar Y, Prof SSChandelDr. Rajesh Kumar, Er	numberAtul Thakur, Preeti201611013315Thakur201611013315Atul Thakur, Preeti201611018053Thakur201611022599Atul Thakur, Preeti201611022599Thakur, Kush Rana201711034816Gagan Bhargava, R.K201711034816Gagan Bhargava, R.K201811030271Dr. Mamta Shandilya,201811030271Dr. Shweta Thakur, Dr.201811030271Radheshyam Rai, Dr.201811031068Ankit Gupta, Prof. Raja201811031068Ankit Gupta, Prof. Raja201811031068Ankit Gupta, Prof. SS201811031209



	Jara, Dr. Mamta		
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	Shandilya		
Dielectric relaxation in I	Dr. Mamta Shandilya,	201811035173	September 18,
bamgtio3 material synthesized I	Dr. Shweta Thakur, Dr.		2018
by hydrothermal method F	Radheshyam Rai, Dr.		
F	Rajesh Kumar		
Prototype of natural mode I	Dr. Rajesh Kumar, Mr	201811035172	September 18,
indirect solar dryer for drying	Ritesh Verma, Mr		2018
of ginger (zingiber officinale)	Humesh Thakur		
in himalayan region			
A system of artificial neural	Dr. Rajesh Kumar, Er	201811036457	September 27,
network model for precise	Sunil Pathania, Dr.		2018
estimation of global solar	Rajeev Kumar Aggarwal		
radiation			
New empirical system for the	Dr. Rajesh Kumar, Mr	201811036456	September 27,
estimation of global solar	Ritesh Verma, Dr.		2018
radiation for indian locations	Rajeev Kumar Aggarwal		
Nanoscale Restraint of polar I	Dr. Mamta Shandilya,	201811036624	September 28,
coupling in Ba _{0.85} Mg _{0.15} TiO ₃	Dr. Radheshyam Rai, Dr.		2018
relaxor ferroelectric F	Rajesh Kumar, Ms		
F	Poonam Kumari, Mr		
F	Ritesh Varma		
High dielectric lead free I	Dr. Mamta Shandilya,	201811038017	October 08, 2018
material Ba _{0.95} Ca _{0.05} TiO ₃	Dr. Radheshyam Rai, Dr.		
synthesized by hydrothermal	Steven J.Milne, Dr.		
method for energy harvesters	Rajesh Kumar		
A Method for Low I	Dr. Mamta Shandilya,	201811038019	October 08, 2018
temperatures synthesis of I	Dr. Radheshyam Rai, Dr.		
Ba _{0.85} Ca _{0.15} Zr _{0.05} Ti0.95O ₃	Rajesh Kumar, Dr.		
Ceramic for capacitor N	Madan Lal, Sapna		
application			
A method for the biosynthesis A	Ankush Chauhan, Swati,	201811045729	December 04, 2018
of Ag doped ZnO	Ritesh Verma, Dr.		



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Thakur, SushamThakur, SushamChauhan, Pankaj ThakurChauhan, Pankaj ThakurSynthesis of silver substitutedRohit Jasrotia, Dr.ng-mn nanoferrites forVirender Pratap Singh,application in recording mediaDr. Rajesh Kumar, Dr.Mahavir SinghMahavir SinghSynthesis of silver dopedRohit Jasrotia, Dr.Synthesis of silver dopedRohit Jasrotia, Dr.Synthesis of silver dopedVirender Pratap Singh,Synthesis of silver dopedVirender Pratap Singh,Strontium w-typeVirender Pratap Singh,	method of producing the same	Chauhan, Mamta		
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Synthesis of silver substituted mg-mn nanoferrites for application in recording mediaRohit Jasrotia, Dr. Virender Pratap Singh, Dr. Rajesh Kumar, Dr. Mahavir Singh201811049897December 31, 2018Synthesis of silver doped strontium w-typeRohit Jasrotia, Dr. Virender Pratap Singh,201811050121December 31, 2018		Thakur, Susham		
mg-mn nanoferrites for application in recording mediaVirender Pratap Singh, Dr. Rajesh Kumar, Dr. Mahavir SinghLease and the second		Chauhan, Pankaj Thakur		
application in recording mediaDr. Rajesh Kumar, Dr. Mahavir SinghLeaseSynthesis of silver dopedRohit Jasrotia, Dr. Virender Pratap Singh,201811050121December 31, 2018	Synthesis of silver substituted	Rohit Jasrotia, Dr.	201811049897	December 31, 2018
Mahavir SinghMahavir SinghSynthesis of silver dopedRohit Jasrotia, Dr.201811050121December 31, 2018strontium w-typeVirender Pratap Singh,Image: Construction of the second secon	mg-mn nanoferrites for	Virender Pratap Singh,		
Synthesis of silver dopedRohit Jasrotia, Dr.201811050121December 31, 2018strontium w-typeVirender Pratap Singh,Image: Constraint of the second seco	application in recording media	Dr. Rajesh Kumar, Dr.		
strontium w-type Virender Pratap Singh,		Mahavir Singh		
	Synthesis of silver doped	Rohit Jasrotia, Dr.	201811050121	December 31, 2018
nanohexaferrites for magnetic Dr. Mahavir Singh, Dr.	strontium w-type	Virender Pratap Singh,		
	nanohexaferrites for magnetic	Dr. Mahavir Singh, Dr.		



recording application	Rajesh Kumar		
A synthesis of lead free	Dr. Mamta Shandilya,	201811050120	December 31, 2018
K0.5Na0.5nbo3 ceramics at	Mr Shammi Kumar, Mr		
low sintering temperature	Ankush Chauhan, Dr.		
	Rajesh Kumar, Dr.		
	Shweta Thakur, Prof		
	Nagesh Thakur		
Sol-gel synthesized barium m-	Mr. Rohit Jasrotia, Dr.	201911001088	January 09, 2019
type hexagonal ferrites for	Virender Pratap Singh,		
high density recording media	Dr. Rajesh Kumar, Dr.		
application	Mahavir Singh		
Materials to enhance the	Dr. Rajesh Kumar,	201911005623	February 13, 2019
efficiency of solar receiver in	Ritesh Verma, Ankush		
concentrated solar power plant	Chauhan, Satvinder		
(csp)	Kour, Dr. Mamta		
	Shandilya, Dr. Pardeep		
	Singh		
A kit for identification of best	Dr. Amita Kumari, Ms.	201911005624	February 13, 2019
harvesting time for the	Sonam Thakur, Dr.		
extraction of essential oil of	Vikas Kumar, Ms.		
mentha longifolia	Prakriti Nidhi, Prof.		
	Anuradha Sourirajan		
Lead free, ferroelectric, nano	Mamta Shandilya,	201911007198	February 25, 2019
sized ceramic compound (bzt-	Shweta Thakur, Amit		
bct) for industrial use	Mahajan, Poonam		
	Kumari, Radheshyam		
	Rai		
Method of low temperature	Mamta Shandilya,	201911007200	February 25, 2019
synthesis of lead free,	Shweta Thakur		
ferroelectric, nano sized			
monophasic ceramic			
compounds			
Zinc oxide nanorods and	Rajesh Kumar, Ankush	201911008270	March 03, 2019
method of producing the same	Chauhan, Ritesh Verma,		
	Mamta Shandilya, Pankaj		



	Raizada, Saurabh		
	Kulshreshtha		
Plant material extraction solar	Dr. Anil Kumar,	316064	March 26, 2019
equipment	Dr.Mamta Sharma, Dr.		
	Rajesh Kumar, Dr. Robin		
	Thakur		
Solar Equipment to Extract	Dr. Anil Kumar,	316069	March 26, 2019
Substances from Plants	Dr.Mamta Sharma, Dr.		
	Rajesh Kumar, Dr. Robin		
	Thakur		
A Process of Synthesis of Ag-	Ankush Chauhan, Swati,	201911012292	March 28, 2019
zno Nanoparticles using	Rajesh Kumar, Saurabh		
Trillium Govanianum	Kulshreshtha, Mamta		
	Shandilya, Sonu, Vikrant		
	Sharma		
Barium strontium titanate	Mamta Shandilya,	201911012842	March 30, 2019
material and method of	Shweta Thakur,		
manufacturing the same	Radheyshyam Rai, Sapna		
	Thakur		
Barium zirconate titanate	Mamta Shandilya,	201911012843	March 30, 2019
material and method of	Radheyshyam Rai,		
manufacturing the same	Poonam Kumar, Gun		
	Anit Kaur		
A Process for synthesis of	Dr Mamta Shandilya	201911012931	March 30, 2019
Lead Free Barium, Strontium			
Titanate Ba0.90Sr10TiO3			
A Process for synthesis of	Ankush Chauhan, Swati,	201911012932	March 30, 2019
Silver Doped Zinc Oxide using	Rajesh Kumar, Saurabh		
Cannabis Sativa Leaf Extract	Kulshreshtha, Mamta		
	Shandilya, Anil Kumar,		
	Zubin Thakur		
A process of synthesis of	Dr Mamta Shandilya, Dr	201911012933	March 30, 2019
barium titanate zirconate bati1-	Radheshyam Rai, Gun		
xzrxo3 ceramics nanoparticles	Anit Kaur, Dr Shweta		
	Thakur		



Solar water heater	Rajesh Kumar, Anil	317840	May 19, 2019
	Kumar, Robin Thakur,		
	Amar Raj Singh Suri		
Solar plant growth chamber	Mamta Sharma, Anil	319295	July 02, 2019
	Kumar, Rajesh Kumar		
A method of synthesis of Zinc	Ritesh Verma, Swati,	201911031031	July 31, 2019
Oxide	Ankush Chauhan, Dr		
(zno) Nanoparticles	Rajesh Kumar, Dr		
	Saurabh Kulshreshtha,		
	Dr Mamta Shandilya, Dr		
	Anil Kumar, Nisha		
	Kumari		
Spin-dependent transport	Dr. Rajesh Kumar, Allah	201911039611	September 30,
properties of graphite	Dekama Jara, Ritesh		2019
nanostructures and methods	Verma, Ankush Chauhan		
thereof			
Apparatus For Extraction of	Anil Kumar, Mamta	323335	November 06, 2019
Oil From Plants	Sharma, Rajesh Kumar,		
	Sameer Rahatekar		
Silver doped zinc oxide	Mamta Sharma, Harish	202011008749	March 01, 2020
nanoparticles and method of	Bassi, Ankush Chauhan,		
synthesis thereof	Ritesh Verma, Garima		
	Rana, Rajesh Kumar		
Gold doped zinc oxide	Mamta Sharma, Rajesh	202011011336	March 16, 2020
nanoparticles and method of	Kumar, Harish Bassi,		
synthesis thereof	Priyanka Chauhan,		
	Himani Pathania, Ankush		
	Chauhan, Ritesh Verma		
Holmium and Yttrium doped	Mrs. Kirti Singha, Dr.	202011013746	March 29, 2020
Ba-Sr Co2 Z-Type Hexaferrite	Virender Pratap Singh,		
based nanomaterials and a	Mrs. Monika Chandel,		
process for the preparation	Dr. Rajesh Kumar		
thereof			
Ba-Nd-Cd-In Hexaferrite	Mr. Rohit Jasrotia, Mr.	202011013744	March 29, 2020
Based Nanomaterial and a	Ankit Verma, Ms.		



process for the preparation	Bhawna Sharma, Dr.		
thereof	Virender Pratap Singh,		
	Dr. Rajesh Kumar		
Mg-Ag-Mn Ferrite Based	Mr. Rohit Jasrotia, Mr.	202011013745	March 29, 2020
Nanomaterials and Process for	Ankit Verma, Ms.		
the Preparation Thereof	Bhawna Sharma,		
	Dr. Virender Pratap		
	Singh, Dr. Rajesh Kumar		
Nanofiber membrane with	Mamta Shandillya, Gun	202011014188	March 31, 2020
enhanced polar phase of	Anit Kaur, Sahil Kumar		
pristine polymers and a			
process for the preparation			
thereof			
CNF Nanofiber Membrane and	Dr. Mamta Shandilya,	202011014158	March 31, 2020
a process for the preparation	Gun Anit Kaur, Dr.		
thereof	Nagesh Thakur, Mr.		
	Shammi Kumar		
Ba-Sr CO2Z–Type Ferrite	Mrs. Kirti Singha, Dr.	202011014157	March 31, 2020
Based Nanomaterial and a	Virender Pratap Singh,		
Process for the Preparation	Mrs. Monika Chandel,		
Thereof	Dr. Rajesh Kumar		
La3+ / Ni2+ ions doped	Mrs. Monika Chandel,	202011014156	March 31, 2020
Sr2Co2Fe12O22 Y-type	Dr. Virender Pratap		
hexaferrite based nanomaterial	Singh, Mrs. Kirti		
and a process for the	Singha, Mr. Rohit		
preparation thereof	Jasrotia, Dr. Rajesh		
	Kumar		
Dy3+ / Ni2+ ions doped	Mrs. Monika Chandel,	202011014159	March 31, 2020
Sr2Co2Fe12O22 Y-type	Dr. Virender Pratap		
hexaferrite based nanomaterial	Singh, Mrs. Kirti		
and a process for the	Singha, Mr. Rohit		
preparation thereof	Jasrotia, Dr. Rajesh		
	Kumar		
A Process for Synthesis of	Dr. Mamta Shandilya,	202011014155	March 31, 2020
Reduced Graphene Oxide	Gun Anit Kaur, Sahil		



	Kumar		
A method for waste water	Rohit Jasrotia, Ankit	202011034248	August 10, 2020
treatment by substitution of	Verma, Pooja Puri,		
mgfe2o4 nanoferrites with	Virender Pratap Singh,		
Ce3+ and Ni2+	Rajesh Kumar		
Flexible energy harvesters for	Mamta Shandilya, sahil	202011042868	October 01, 2020
shoes based on piezoelectric	kumar, Gun Anit Kaur		
nanofibers			
Flexible energy harvesters for	Mamta Shandilya, Gun	202011042867	October 02, 2020
scavenging mechanical energy	Anit Kaur		
based on piezoelectric			
nanofibers			
Sol-Gel synthesized Zinc and	Rohit Jasrotia, Ankit	202111006739	February 18, 2021
Lanthanum doped	Verma, Virender Singh,		
Manganesenanoferrites with	Pratap Singh, Rajesh		
enhanced magnetic property	Kumar		
and photocatalytic degradation			
of Malachite Green Dyefor			
Waste Water Treatment.			
Synthesis of nanoparticles and	Dr. Rajesh Kumar, Dr	202111014582	March 30, 2021
a process of preparation	Amita Kumari, Sohan		
thereof	Lal, Ankush Chauhan,		
	Ritesh Verma, Kumari		
	Mansi		
Novel plant based synthesis	Dr. Rajesh Kumar, Dr	202111013857	March 30, 2021
and photocatalytic dye	Amita Kumari, Jyoti		
degradation nanoparticles and	Dhatwalia, Ankush		
a process of preparation	Chauhan, Shabnam		
thereof	Thakur, Kumari Mansi		
A green synthesis of	Dr. rajesh Kumar, Dr	202111013533	March 30, 2021
nanoparticles and a process of	Amita Kumari, Jyoti		
preparation thereof	Dhatwalia, Ankush		
	Chauhan, Shabnam		
	Thakur, Kumari Mansi		
Green synthesis of	Dr. Rajesh Kumar, Dr	202111013856	March 30, 2021



nanoparticles using plantAmita Kumari, JyotiImage: Chauhan, ShabnamImage: Chauhan, Shabnampreparation thereofChauhan, Shabnam202111023718May 28, 2021Method and composition ofDr. Rajesh Kumar202111023718May 28, 2021magnetic cobalt ferriteSharma, AnkushImage: Chauhan, Ritesh Verma,Image: Chauhan, Ritesh Verma,Image: Chauhan, Ritesh Verma,(CoFe2O4) nanoparticles withChauhan, Ritesh Verma,Image: Chauhan, Ritesh Verma,Image: Chauhan, Ritesh Verma,Image: Chauhan, Ritesh Verma,Method for performingMamta Shandilya, Gun202111023658May 28, 2021Method for performingMamta Shandilya, Gun202111023658May 28, 2021Synthesis of carbonquantumAnit KaurImage: Chauhan, Ritesh Verma,Image: Chauhan, Ritesh Verma,Image: Chauhan, Ritesh Verma,Method for performingMamta Shandilya, Gun202111023658May 28, 2021Synthesis of carbonquantumAnit KaurImage: Chauhan, Ritesh Verma,Image: Chauhan, Ritesh Verma,dots via electrospinningDr. Rajesh Kumar202111030588July 08, 2021
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dots via electrospinning
Copper oxide nanoparticlesDr. Rajesh Kumar202111030588July 08, 2021
comprising Sharma, Dr. Sourabh
zanthoxylumarmatum plant Kulshretha, Ankush
extract and method of Chauhan, Ritesh Verma,
synthesis thereof Swati Kumari, Mansi
Kumari
Gadolinium and niobium co-Dr. Rajesh Kumar202111030589July 08, 2021
doped barium titanate ceramic Sharma, Ritesh Verma,
material and method of Ankush Chauhan
manufacturing the same
Vanadium doped bariumDr. Rajesh Kumar202111030590July 08, 2021
calcium zirconate titanate Sharma, Ritesh Verma,
cermamic material and method Ankush Chauhan, Khalid
of manufacturing the same Mujasam Batoo

Activities:

- Centre organized 3 day's International workshop on advanced characterization of materials (ACTM-2021) during 16-18 Feb 2020.
- International Workshop on Advanced Materials for Engineering and Solar Energy Applications during 16-17th Dec 2019.
- 3rd National conference on multifunctional advanced materials during (MAM-2016) May 11-13, 2016.

















Facility at Centre of Nanotechnology