

Allegato alla domanda di partecipazione
Curriculum formativo, didattico, scientifico e professionale del candidato

Dichiarazione sostitutiva di certificazioni

(Art. 46, D.P.R. 28 dicembre 2000 n. 445)

Dichiarazione sostitutiva dell'atto di notorietà

(da sottoscrivere davanti all'impiegato addetto o da presentare o spedire con la fotocopia di un documento di identità)

(Art. 47, D.P.R. 28 dicembre 2000 n. 445)

Estremi del bando di selezione	Selezione pubblica per il conferimento di Assegni di Ricerca ai sensi dell'art. 22 della L. 30/12/2010, n. 240 - Tipo B - Assegni su altri fondi (D.R. n. 1348 del 28.08.2024, rettificato con D.R. n. 1430 del 12.09.2024). Titolo del Progetto: "Studio delle proprietà termoelettriche di Metal-Organic Framework tramite simulazioni multiscala" - Area: 02 - Scienze fisiche - Settore Concorsuale: 02/B2 - Fisica teorica della materia – SSD: FIS/03 - Responsabile Scientifico: Prof. Claudio Melis – Cod. SEL. 100A_24 -	
Informazioni aggiornate al	26/11/2024	
Nome e Cognome	Hardik Kagdada	

Si raccomanda di indicare con precisione tutti gli elementi valutabili ai sensi del bando di selezione (aggiungere o togliere righe secondo necessità).

Esperienza professionale

Periodo	Ente	Principali attività e responsabilità
15/01/2019-15/01/2022	Teaching Assistantship	Physics Tutorials, Physics Lab duties, Departmental work (Exam supervision duties)

Istruzione, formazione (es. titoli di studio, certificazioni professionali/linguistiche/informatiche)

Data	Titolo / Principali tematiche	Ente
09/02/2023	Ph.D.	Ph.D. in Physics
2016	Master of Science (M.Sc.)	M.Sc. in Physics
2014	Bachelor of Science (B.Sc.)	B.Sc. in Physics

Pubblicazioni / Convegni

Journal articles

1. **Hardik L. Kagdada**, and Ankit Jain, Impact of Vacancy Defects on Electrochemical Nitrogen Reduction Reaction Performance of MXenes. *ChemPhysChem*, **25**, e202300993 (2024).
2. Amit K. Bhojani, **Hardik L. Kagdada** and Dheeraj K. Singh. "Ultrahigh power factor and excellent solar efficiency in two-dimensional hexagonal group-IV–V nanomaterials." *Journal of Applied Physics*, **135**, 095106 (2024).
3. **Hardik L. Kagdada**, Basant Roondhe, Vaishali Roondhe, Shweta D. Dabhi, Wei Luo, Dheeraj K. Singh and Rajeev Ahuja. Exploring A-Site Cation Variations in Dion–Jacobson Two-Dimensional Halide Perovskites for Enhanced Solar Cell Applications: A Density Functional Theory Study, *Advanced Energy & Sustainability Research*, 2300147 (2023).

4. Amit K Bhojani, **Hardik L. Kagdada**, Rajeev Ahuja and Dheeraj K. Singh. Carbon-based Monochalcogenides for Efficient Solar and Heat Energy Harvesting, *Applied Surface Science*, **608**, 155121 (2023).
5. **Hardik L. Kagdada**, Shovit Bhattacharya, Arnulf Materny and Dheeraj K Singh. Two-dimensional Halide Perovskite Materials Featuring 2-(Methylthio)ethylamine Organic Spacers for Efficient Solar and Heat Energy Harvesting, *Journal of Physical Chemistry C*, **126**, 21518-21526 (2022).
6. **Hardik L. Kagdada**, Arnulf Materny and Dheeraj K Singh. Decreasing Toxicity and Increasing Photoconversion Efficiency by Sn-substitution of Pb in 5-ammonium Valeric Acid-based Two-dimensional Hybrid Perovskite Materials, *Physical Chemistry Chemical Physics*, **24**, 23226-23235 (2022). [Featured as 2022 PCCP HOT Article]
7. Deepak K. Pandey, **Hardik L. Kagdada**, Arnulf Materny, and Dheeraj K. Singh. "Adsorption and breaking of hazardous methyl mercury on hybrid structures of ionic liquids and ZnO nanoclusters." *Journal of Molecular Liquids*, **364**, 19957 (2022).
8. **Hardik L. Kagdada**, Sanjeev K. Gupta, Satyaprakash Sahoo, and Dheeraj K. Singh. "Mobility Driven Thermoelectric and Optical Properties of Two-Dimensional Halide-based Hybrid Perovskites: Impact of Organic Cation Rotation." *Physical Chemistry Chemical Physics*, **24**, 8867 (2022).
9. Vishakha Kaushik,* **Hardik L. Kagdada**,* Dheeraj K. Singh, Sachin Pathak "Enhancement of SERS effect in Graphene-Silver hybrids." *Applied Surface Science*, **574**, 151724 (2022). (*Contributed equally)
10. Paridhi Sanchora, Deepak K. Pandey, **Hardik L. Kagdada**, and Dheeraj K. Singh "Understanding the fundamental interaction mechanism of hazardous gases and imidazolium based ionic liquids for efficient gas adsorption." *Chemical Engineering Science*, **247**, 117031 (2022)
11. Deepak K. Pandey, **Hardik L. Kagdada**, Arnulf Materny, and Dheeraj K. Singh. "Hybrid Structure of Ionic Liquid and TiO₂ Nanoclusters for Efficient Hydrogen Evolution Reaction." *The Journal of Physical Chemistry A*, **125**, 2653-2665 (2021).
12. Deepak K. Pandey, **Hardik L. Kagdada**, Arnulf Materny, and Dheeraj K. Singh. "Hybrid Structure of Ionic Liquid and ZnO Nano Clusters for Potential Application in Dye-Sensitized Solar Cells." *Journal of Molecular Liquids*, **322**, 114538 (2021).
13. **Hardik L. Kagdada**, Sanjeev K. Gupta, Satyaprakash Sahoo, and Dheeraj K. Singh. "Rashba Splitting in Two Dimensional Hybrid Perovskite Materials for High Efficient Solar and Heat Energy Harvesting." *Journal of Physical Chemistry Letters*, **11**, 7679-7686 (2020).
14. **Hardik L. Kagdada**, Prafulla K. Jha, Piotr Śpiewak, Krzysztof J. Kurzydłowski, and Dheeraj K. Singh. "Pressure-induced First Order Phase Transition in Bulk GeSe." *Journal of Applied Physics*, **127**, 175104 (2020).
15. Paridhi Sanchora, Deepak K. Pandey, **Hardik L. Kagdada**, Arnulf Materny, and Dheeraj K. Singh. "Impact of Alkyl Chain Length and Water on The Structure and Properties of 1-Alkyl-3-Methylimidazolium Chloride Ionic Liquids." *Physical Chemistry Chemical Physics*, **22**, 17687-17704 (2020).

16. Basant Roondhe, Vaishali Sharma, **Hardik L. Kagdada**, Dheeraj K. Singh, Tanusri Saha Dasgupta, and Rajeev Ahuja. "Enhancing the Electronic and Phonon Transport Properties of Two-Dimensional Hexagonal Boron Nitride Through Oxygenation: A First Principles Study." *Applied Surface Science*, **533**, 147513 (2020).
17. Vaishali Sharma, **Hardik L. Kagdada**, Jinlan Wang, and Prafulla K. Jha. "Hydrogen Adsorption on Pristine and Platinum Decorated Graphene Quantum Dot: A First Principle Study." *International Journal of Hydrogen Energy*, **45**, 23977-23987 (2020).
18. Vaishali Sharma, **Hardik L. Kagdada**, and Prafulla K. Jha. "Four-Fold Enhancement in the Thermoelectric Power Factor of Germanium Selenide Monolayer by Adsorption of Graphene Quantum Dot." *Energy*, **196**, 117104 (2020).
19. **Hardik L. Kagdada**, Shweta D. Dabhi, Venu Mankad, Satyam M. Shinde, and Prafulla K. Jha. "First Principles Study on Small $ZrAl_n$ and $HfAl_n$ Clusters: Structural, Stability, Electronic States and CO_2 Adsorption." *Materials Chemistry and Physics*, **239**, 122264 (2020).
20. Vaishali Sharma, **Hardik L. Kagdada**, Prafulla K. Jha, Piotr Śpiewak, and Krzysztof J. Kurzydłowski. "Halogenation of SiGe Monolayers: Robust Changes in Electronic and Thermal Transport." *Physical Chemistry Chemical Physics*, **21**, 19488-19498 (2019).
21. **Hardik L. Kagdada**, Prafulla K. Jha, Piotr Śpiewak, and Krzysztof J. Kurzydłowski. "Understanding the Behavior of Electronic and Phonon Transports in Germanium Based Two Dimensional Chalcogenides." *Journal of Applied Physics*, **124**, 235701 (2018).
22. **Hardik L. Kagdada**, Shweta D. Dabhi, and Prafulla K. Jha. "Density Functional Study of Adsorption and Desorption Dynamics of Hydrogen in Zirconium Doped Aluminium Clusters." *International Journal of Hydrogen Energy*, **43**, 21724-21731 (2018).
23. **Hardik L. Kagdada**, Prafulla K. Jha, Piotr Śpiewak, and Krzysztof J. Kurzydłowski. "Structural Stability, Dynamical Stability, Thermoelectric Properties, and Elastic Properties of GeTe at High Pressure." *Physical Review B*, **97**, 134105 (2018).

Review Articles

1. Vaishali Sharma, **Hardik L. Kagdada**, Prafulla K. Jha, Piotr Śpiewak, and Krzysztof J. Kurzydłowski. "Thermal Transport Properties of Boron Nitride Based Materials: A Review." *Renewable and Sustainable Energy Reviews*, **120**, 109622 (2020).

Conference Proceedings

1. **Hardik L. Kagdada**, Vaishali Sharma, Prafulla K. Jha, and Dheeraj K. Singh. "Strain Induced Enhancement in Thermoelectric Power Factor of $ZrTe_2$ " *AIP Conference Proceedings*, **2265**, 030463, AIP Publishing LLC, 2020.
2. **Hardik L. Kagdada**, Anjali Patel, and Prafulla K. Jha. "Structural, Magnetic and Electronic Properties of Ferrimagnetic and Non-Magnetic Cubic Phase of MnV_2O_4 " *AIP Conference Proceedings*, **2115**, 030486. AIP Publishing LLC, 2019.
3. **Hardik L. Kagdada**, Shweta D. Dabhi, and Prafulla K. Jha. "Bandgap Tuning and Enhancement of Seebeck Coefficient in One Dimensional GeSe." In *AIP Conference Proceedings*, **1942**, 110010, AIP Publishing LLC, 2018.

Book Chapters

1. **Hardik L. Kagdada**, Vaishali Sharma, Ajit Kumar Parwani, and Dheeraj K. Singh. Strain-Engineered Electronic and Thermoelectric Properties of Two-Dimensional SnGe. In *Recent Advances in Mechanical Infrastructure*, pp. 59-67. Springer, Singapore, 2022
2. Deepak K Pandey, **Hardik L. Kagdada**, Paridhi Sanchora, Dheeraj K Singh. "Overview of Raman Spectroscopy: Fundamental to Applications", In *Modern Techniques of Spectroscopy: Basics, Instrumentation, and Applications*, pp. 145-184. Springer, Singapore, 2021.
3. Vaishali Sharma, **Hardik L. Kagdada**, Dheeraj K. Singh, and Prafulla K. Jha. "Trapping Melamine with Pristine and Functionalized Graphene Quantum Dots: DFT and SERS Studies." In *Advances in Spectroscopy: Molecules to Materials*, pp. 441-451. Springer, Singapore, 2019.
4. **Hardik L. Kagdada**, Hiral J. Trivedi, Sharad B. Pillai, Narayan N. Som, and Prafulla K. Jha. "Structural, Electronic and Dynamical Properties of Binary Alloy Zr-Al Using Density Functional Theory." In *Advanced Materials Research*, vol. 1141, pp. 204-209. Trans Tech Publications Ltd, 2016.

Altre attività scientifiche

Invited Talks/Conference/Seminar/workshops attended

- Participated and presented two posters in the **European Materials Research Society EMRS Spring Meeting 2024** (EMRS-2024) spring meeting organized at Strasbourg, France (26-31 May, 2024).

Poster Presentation: Impact of Vacancy Defects on Electrochemical Nitrogen Reduction Reaction Performance of MXenes

Poster Presentation: Exploring A-site Cation Variations in Dion-Jacobson Two-Dimensional Halide Perovskites for Enhanced Solar Cell Applications: A DFT Study

- Participated and presented work in "College on Energy Transport and Energy Conversion in the Quantum Regime" held at The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy (12- 30 August 2019)

Short Invited Talk: *Halogenation of SiGe monolayer: Robust change in electronic and thermal transport*

Poster Presentation: *Enhancement of Thermoelectric Figure of Merit by Quantum Confinement Effect in Germanium Telluride (GeTe)*

- Online International Conference on Recent Advances in Functional Materials (RAFM-2022) organized by Department of Physics, IQAC, ARSD college, University of Delhi, on 14-16 March 2022. **Awarded by Best Oral Presentation**

Oral Presentation: *Rashba Splitting in Two Dimensional Hybrid Perovskite Materials for High Efficient Solar and Heat Energy Harvesting*

- Online Workshop on Excited Charge Dynamics in Semiconductors, organized by The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy (28-30 Sept. 2020)
- E-Conference (webinar) on "Leveraging Science and Technology to Combat COVID-19"

organized by Faculty of Science, DDU Gorakhpur University, Gorakhpur (23-24 May 2020)

- 64th DAE Solid State Physics Symposium held at Indian Institute of Technology Jodhpur, India (18-22 Dec 2019)

Poster Presentation: *Strain induced enhancement in thermoelectric power factor of $ZrTe_2$*

- 63rd DAE Solid State Physics Symposium held at Guru Jambheshwar University of Science & Technology, Hisar, India (18-22nd Dec 2018)

Poster Presentation: *Structural, magnetic and electronic properties of ferrimagnetic and non-magnetic cubic phase of MnV_2O_4*

- 62nd DAE Solid State Physics Symposium held at DAE Convention Centre, Bhabha Atomic Research Centre (BARC), Mumbai, India, (26-30th Dec 2017)

Poster Presentation: *Bandgap tuning and enhancement of Seebeck coefficient in one dimensional GeSe*

- “Recent Trends on Membranes and Separation Technology (RTMST)” held at CSMCRI-Bhavnagar, Gujarat during 22-23 Nov. 2017

Poster Presentation: *Density Functional Study of Adsorption and Desorption of Hydrogen on Zirconium Doped Aluminium Clusters*

- 6th International Conference on Perspective in Vibrational Spectroscopy (ICOPVS 2016) held at the University of Lucknow, Lucknow from 5-8 Nov. 2016.

- Got the Opportunity to do a 2-month project as a Summer Fellow on “*Study of Cloud Base Height over Ahmedabad*” at Physical Research Laboratory, Ahmedabad, from 16th May to 8 July 2016.

- Participated in an open house and Science fair and demonstrated a model of “Simple Electric Train” at The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat on 3rd and 4th January 2016

- Presented a poster entitled “*Structural, electronic and dynamical properties of binary alloy $Zr-Al$ using density functional theory*” in NCSM-2K15 held at The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat on December 28 – 30, 2015.

Ulteriori informazioni pertinenti

Luogo, data e firma