**CV**

# **Name of the applicant:** **Saleh Hasan Naqib**

**Date of Birth:** 3rd August 1970

##  **Nationality:** Bangladeshi

**Present position:** **Professor**, Department of Physics, Rajshahi University, Bangladesh

**Academic qualifications:**

**Degree** **University** **Result**

Ph.D. in Physics University of Cambridge, Degree conferred on the

 UK 19th of July 2003

[**\***Southern Illinois University GPA for the

 in Carbondale (SIUC), USA Spring term: 4.0

 (1998)]

M.Sc. in Physics Rajshahi University, 1st Class, First position

(Condensed Matter Bangladesh (1997)

Physics group)

# B.Sc. in Physics Rajshahi University, 1st Class, First position

 Bangladesh (1995)

**Ph.D. thesis title:** ***An Experimental Study of the Effects of Hole Content and Disorder on the Pseudogap of the High-Tc Superconductor Y1-xCaxBa2(Cu1-yZny)3O7-δ***

**\*\*CPGS thesis title: *Low Field AC Susceptibility and Critical Currents of Optimally Doped YBCO Single Crystal***

**M.Sc. thesis title:** ***Copper Oxide Superconductors in the Generalized Phonon-Plasmon Mechanism***

**\***Went to Southern Illinois University in Carbondale (SIUC), USA, with a research assistantship as a graduate student in Physics in January 1998. Studied there for the Spring-term before getting the Commonwealth Scholarship for Ph.D. in University of Cambridge, UK (from October 1998).

**\*\***CPGS (Certificate of Postgraduate Study) thesis was based on the first year research as a Ph.D. student in Physics in University of Cambridge, UK.

**Fields in which specially qualified:**

Condensed Matter Physics (experimental and theoretical), High-Temperature Superconductivity, Density Functional Theory, Materials Science, Statistical Mechanics, Quantum Mechanics, Photovoltaics, Physics Teaching-Learning (Pedagogy), and Science Education in Bangladesh.

**Awards/ Scholarships:**

1. **ICTP postgraduate scholarship** for one year for the advanced course in theoretical Physics in ICTP, Italy **from September 1997**.
2. **Research assistantship** in Physics at **SIUC, USA (from January 1998)**.
3. The **Commonwealth Scholarship for Ph.D.** in Physics at University of Cambridge, UK **(October 1998 – February 2002)**.
4. **Scholarships/Studentships from Physics Department, Cambridge Philosophical Society, and Darwin College, University of Cambridge, Lundgren Research Grant, for the period of March 2002 – March 2003**.
5. **Bangladesh Academy of Sciences (BAS) Gold Medal as the Junior Scientist of the Year 2007 (Physical Sciences Category)**.
6. The World Academy of Science (**TWAS, ICTP, ITALY) Award as the Young Scientist of the Year 2008 from Bangladesh in the Physical Sciences Category**.
7. **Regular Associate membership from the AS-ICTP, Italy, for the period Jan 2009 – Dec 2015**.
8. **Razzaq-Shamsun Physics Research Award for the best Physics paper published from Bangladesh in the year 2006 (awarded in 2011)**.
9. **S N Nahar Physics Research Award as the best researcher at Department of Physics, University of Rajshahi, for the year 2014.**
10. **S N Nahar Physics Teacher of the Year Award as the best teacher selected by the students of Department of Physics, University of Rajshahi, for the year 2015.**
11. **S N Nahar Physics Research Award as the best researcher at Department of Physics, University of Rajshahi, for the year 2016.**
12. **S N Nahar Physics Teacher of the Year Award as the best teacher selected by the students of Department of Physics, University of Rajshahi, for the year 2017.**
13. **Dean’s Award 2018 in research from the Faculty of Science, University of Rajshahi, as the best researcher in the Physical and Mathematical Sciences Category.**
14. **Bangladesh Academy of Sciences (BAS) Gold Medal as the Senior Scientist for the Year 2016 (Physical Sciences Category)**.
15. **Elected Fellow of the Bangladesh Academy of Sciences,** the apex body for the scientists in Bangladesh. Membership is for life.
16. **Elected Fellow of the World Academy of Sciences (TWAS), Italy for the Year 2022**. TWAS is a merit-based science academy, representing the best of science in developing countries. The main criterion for election as a TWAS Member is scientific excellence. Only those scientists who have attained the highest international standards and have made significant contributions to the advancement of science can be nominated as Fellows. Membership is for life.

**Teaching/Research experiences:**

1. Worked as an **M.Sc. research student** with Prof. A.K.M Azharul Islam, Department of Physics, **Rajshahi University, Bangladesh,** on theoretical aspects of high-Tc superconductors during the period of **1996-1997**.
2. Worked on the theory of Colossal Magneto Resistivity (CMR), as the **Research** **Assistant** of Prof. F.B. Malik in **SIUC, USA** for the **spring term 1998**.
3. Joined as a **Lecturer in Physics**, **University of Rajshahi, Bangladesh**, on **1** **June 1998**. Taught Mathematical Methods in Physics to undergraduate and graduate students and also took part in developing the graduate Solid State Physics course.
4. **Supervised third year undergraduates in Physics at University of Cambridge for the Solid State Physics course (2001).**

5. **In each year from 2000 to 2002, I worked as a demonstrator in the Optics lab for the second year undergraduate students in University of Cambridge, UK**.

6. Worked as a **Ph.D. student** of Prof. J.R. Cooper on the transport and magnetic properties of Ca and Zn substituted Y123 superconductors at **University of Cambridge, UK**, **from October 1998 to March 2003**.

7. Worked as a **Postdoctoral Researcher** with Prof. J.R. Cooper on magneto-transport properties of Zn and Ca substituted c-axis oriented crystalline thin films of Y123 at **University of Cambridge, UK,** from **June 2003 to September 2003**.

8. Worked as a **Postdoctoral Researcher** with Prof. J.L. Tallon at the **MacDiarmid Institute for Advanced Materials and Nanotechnology, at Victoria University of Wellington, New Zealand**, from **September 2003 to June 2004** on Raman scattering, Infrared study, magnetic properties, and critical currents of high-Tc superconductors as a function of hole concentration and disorder contents.

9. Worked as a **Postdoctoral Research Associate** with Prof. J.R. Cooper from **July 2004 to May 2005** at the IRC in Superconductivity and the Quantum Matter group, **University of Cambridge, UK**. My research involved magneto-transport measurements on isotope substituted high-Tc superconductors. These studies yielded valuable information regarding the origin and the doping dependence of the so-called “pseudogap phase” of the cuprate superconductors. The origin of the pseudogap is believed to be an outstanding problem in the physics of high-Tc superconductors.

10. Rejoined the Department of Physics, **Rajshahi University, Bangladesh**. From the 23rd of May, 2005, I worked as an **Assistant Professor (effective since June 2001)** **in the Department till the 21st of March 2007.**

11. Visited the **Quantum Matter Group, Department of Physics, University of Cambridge as an Invited Scholar for the period 1 June 2006 to 31 July 2006**. During this time I have done research on the effects of non-magnetic impurities in cuprates and the Nernst effect.

12. Promoted to the post of **Associate Professorship** on the 21st of March, 2007, and served in this position till October 2011.

13. Invited as a **Visiting Scholar**, by **Quantum Matter Group, Department of Physics, University of Cambridge, UK, for the period June-July 2007.** I have conducted research on magneto-transport properties of cuprates at the **Cavendish Laboratory** during this period.

14. Invited as **Visiting Scholar** by **Quantum Matter Group, Department of Physics, University of Cambridge, UK, for the period October-November 2008** to investigate the electronic and magnetic properties of the recently discovered FeAs-based superconductors.

15. Invited as **Visiting Scholar** by **Quantum Matter Group, Department of Physics, University of Cambridge, UK, for the period April-May 2010** to investigate the superfluid density of very underdoped Y123 superconductors.

16. Visited the **AS-ICTP, Trieste, Italy, as a Regular Associate for the period April-May 2011** to conduct research on disordered strongly correlated electronic systems.

17. **Since November 2011, working as a Professor in the Department**. My duties involve, teaching undergraduate and graduate students, supervising graduate students, and research on various magneto-transport properties of High-Tc cuprates. I am also playing a significant role in curriculum development. As an active collaborator, I am keeping close contacts with the IRC in Superconductivity and the Quantum Matter group at University of Cambridge, UK.

18. Visited the **AS-ICTP, Trieste, Italy, as a Regular Associate for the period May-July 2012** and conducted research on superconducting pairing and flux dynamics related issues in high-Tc cuprates.

19. Visited the **AS-ICTP, Trieste, Italy, as a Regular Associate for the period May-July 2014** and conducted research on pseudogap phenomenon in high-Tc cuprates.

20. Visited the **AS-ICTP, Trieste, Italy, as a Regular Associate for the period June-August 2015** and conducted research on in- and out-of-plane charge transport in quasi-2D hole doped cuprates.

**Proficiency in English:**

**TOEFL** Score: 630 (1996)

**IELTS** Score: 7.5 (1998)

**List of Published papers in international journals (\* denotes corresponding authorship):**

128. Optical response, lithiation and charge transfer in Sn-based 211 MAX phases with electron localization function

 *M.A. Hadi, N. Kelaidis, A. Chroneos,* ***S.H. Naqib****, A.K.M.A. Islam*

 Journal of Materials Research and Technology (2022).

127. Magnetic Field and Frequency Dependent Study of the AC Susceptibility of High-Tc YBCO Single Crystal

 *M. Rakibul Hasan Sarkar,* ***S.H. Naqib\****

 Journal of Superconductivity and Novel Magnetism (2022). <https://doi.org/10.1007/s10948-022-06167-y>

126. First-principles insights into mechanical, optoelectronic, and thermo-physical properties of transition metal dichalcogenides ZrX2 (X = S, Se, Te)

 *Md. Mahamudujjaman, Md. Asif Afzal, R.S. Islam,* ***S.H. Naqib\****

 AIP Advances **12**, 025011 (2022); <https://doi.org/10.1063/5.0073631>

125. First-principles prediction of pressure dependent mechanical, electronic, optical, and superconducting state properties of *NaC*6: A potential high-*T*c superconductor

 *Nazmun Sadat Khan, B. Rahman Rano, Ishtiaque M. Syed, R.S. Islam,* ***S.H. Naqib\****

Results in Physics (2022). <https://doi.org/10.1016/j.rinp.2022.105182>

124. Newly synthesized 3D boron-rich chalcogenides B12X (X = S, Se): Theoretical characterization of physical properties for optoelectronic and mechanical applications

 *M.M. Hossain, M.A. Ali, M.M. Uddin,* ***S.H. Naqib\*****, A.K.M.A. Islam*

 ACS Omega (2021). DOI: 10.1021/acsomega.1c05172

123. A density functional theory approach to the effects of C and N substitution at the B-site of the first boride MAX phase Nb2SB

 *M.A. Hadi, Zahanggir Alam, Istiak Ahmed, A.M.M. Tanveer Karim,* ***S.H. Naqib****, A. Chroneos, A.K.M.A. Islam*

 Materials Today Communications (2021). DOI: 10.1016/j.mtcomm.2021.102910

122. A first-principles prediction of thermophysical and thermoelectric performances of SrCeO3 perovskite

 *Preeti Kumari, Vipul Srivastaba, Rabah Khenata, Sajad Ahmad Dar,* ***S.H. Naqib***

 International Journal of Energy Research (2021). DOI: 10.1002/er.7354

121. Understanding the improvement of thermo-mechanical and optical properties of 212 MAX phase borides Zr2AB2 (A = In, Tl)

 *M.A. Ali, M.M. Hossain, M.M. Uddin, A.K.M.A. Islam,* ***S.H. Naqib\****

 Journal of Materials Research and Technology (2021). <https://doi.org/10.1016/j.jmrt.2021.09.042>

120. Hole content dependent fluctuation diamagnetism in YBa2Cu3O7-δ: possible role of the pseudogap

 *Ayesha Siddika Borna, R.S. Islam,* ***S.H. Naqib\****

 Journal of Superconductivity and Novel Magnetism (2021). <https://link.springer.com/article/10.1007/s10948-021-06035-1>

119. A comprehensive study of the thermophysical and optoelectronic properties of Nb2P5 via *ab-initio* technique

 *M.I. Naher,* ***S.H. Naqib\****

 Results in Physics (2021). <https://doi.org/10.1016/j.rinp.2021.104623>

118. A comprehensive DFT based insights into the physical properties of tetragonal superconducting Mo5PB2

 *M.I. Naher, M.A. Afzal,* ***S.H. Naqib\****

 Results in Physics (2021). <https://doi.org/10.1016/j.rinp.2021.104612>

117. Structural, electronic, magnetic and mechanical properties of the full-Heusler compounds Ni2Mn(Ge, Sn) and Mn2NiGe

 *N. Asli, F. Dahmane, Mohamed Mokhtari, C. Zouaneb, M. Batouche, H. Khachai, V. Srivastava,****S.H. Naqib****, Y. Al-Douri, A. Bouhemadou, R. Khenata*

 Zeitschrift für Naturforschung A (ZNA) (2021). <https://www.degruyter.com/document/doi/10.1515/zna-2020-0329/html>

116. Origin of high hardness and optoelectronic and thermo-physical properties of boron-rich compounds B6X (X = S, Se): a comprehensive study via DFT approach

 *M.M. Hossain, M.A. Ali, M.M. Uddin, A.K.M.A. Islam,* ***S.H. Naqib\****

 Journal of Applied Physics (2021). <https://aip.scitation.org/doi/pdf/10.1063/5.0047139>

115. A comparative study of structural, thermal, and optoelectronic properties between zircon and scheelite type structures in SrMoO4 compound: An ab-initio study

 *M. Benzineb, F. Chiker, H. Khachai, H. Meradji, S. Uǧur,* ***S.H. Naqib\*****, S. Bin Omran, Xiaotian Wang, R. Khenata*

 Optik (2021). <https://doi.org/10.1016/j.ijleo.2021.166714>

114. Electronic band structure, elastic, optical and thermodynamic characteristic of cubic YF3: an ab initio study

 *Mohamed Amine Ghebouli, Brahim Ghebouli, Tayeb Chihi, Messaoud Fatmi, Rabah Khenata,* ***S.H. Naqib***

 Optik (2021). <https://doi.org/10.1016/j.ijleo.2021.166680>

113. [Comparative study of predicted MAX phase Hf2AlN with recently synthesized Hf2AlC: a first principle calculations](https://www.researchgate.net/publication/349683546_Comparative_study_of_predicted_MAX_phase_Hf2AlN_with_recently_synthesized_Hf2AlC_a_first_principle_calculations?_sg=wvxvoZSnU8RAwLQZGHIBMxQcPjPyiGv9mvA8gnHVHly1iec6VcjrOF6ytLTHsgn4ozzPGG3qMdgGQGED2QTc_D-OuhFTHcXop0f0I4F4.Vm26g4TdrHHOTglEqbuKgCRKtRVfCwWqVll9vMwsowrxhZWnBMyrHaSh0bwb3j79NlAIZasvA8dNGXJ4hkBeAg)

 *M.M. Uddin, M.A. Ali, M.M. Hossain,* ***S.H. Naqib****, A.K.M.A. Islam*

Indian Journal of Physics (2021). <https://doi.org/10.1007/s12648-021-02050-z>

112. An *ab-initio* study on structural, elastic, electronic, bonding, thermal, and optical properties of topological Weyl semimetal Ta*X* (*X* = P, As)

 *M.I. Naher,* ***S.H. Naqib\****

 Scientific Reports (2021). <https://www.nature.com/articles/s41598-021-85074-z>

111. Effect of boron incorporation into the carbon-site in Nb2SC MAX phase: Insights from DFT

 *S.K. Mitro, M.A. Hadi, F. Parvin, R. Majumder,* ***S.H. Naqib****, A.K.M.A. Islam*

  Journal of Materials Research and Technology (2021). <https://doi.org/10.1016/j.jmrt.2021.02.031>

110. A DFT based first-principles investigation of optoelectronic and structural properties of Bi2Te2Se

 *Md. Asif Afzal,* ***S.H. Naqib\****

 Physica Scripta **96**, 045810 (2021). <https://doi.org/10.1088/1402-4896/abe2d2>

109. Droplet and Aerosol Suspension Times in Ambient Air in Confined Spaces and Transmission of COVID-19: Influence of Environmental Factors

 *Md. Raihan Islam,* ***S.H. Naqib\****

 Journal of Scientific Research (2021). <https://doi.org/10.3329/jsr.v13i2.50273>

108. Pressure dependence of structural, elastic, electronic, thermodynamic, and optical properties of van der Waals-type NaSn2P2 pnictide superconductor: insights from DFT study

 *F. Parvin,* ***S.H. Naqib\****

 Results in Physics (2021). <https://doi.org/10.1016/j.rinp.2021.103848>

107. Physical properties of new MAX phase borides M2SB (M = Zr, Hf and Nb) in comparison with conventional MAX phase carbides M2SC (M = Zr, Hf and Nb): Comprehensive insights

 *M.A. Ali, M.M. Hossain, M.M. Uddin, M.A. Hossain, A.K.M.A. Islam,* ***S.H. Naqib\****

 Journal of Materials Research and Technology (2021). <https://doi.org/10.1016/j.jmrt.2021.01.068>

106. Effects of Al substitution by Si in Ti3AlC2 nanolaminates

 *M.A. Hadi, M. Roknuzzaman, M.T. Nasir, U. Monira,* ***S.H. Naqib****, A. Chroneos, A.K.M.A. Islam, J.A. Alarco, K. Ostrikov*

 Scientific Reports (2021). <https://doi.org/10.1038/s41598-021-81346-w>

105. Influence of Se doping on recently synthesized NaInS2-xSex solid solutions for potential thermo-mechanical applications studied via first-principles method

 *M.M. Hossain, M.A. Ali, M.M. Uddin, M.A. Hossain, M. Rasadujjaman,* ***S.H. Naqib\*****, M. Nagao, S. Watauchi, I. Tanaka*

 Mater. Today Commun. (2021). <https://doi.org/10.1016/j.mtcomm.2020.101988>

104. Optoelectronic, thermodynamic and vibrational properties of intermetallic MgAl2Ge2: A first-principles study

 *A.* [*M. M. Tanveer Karim*](https://www.researchgate.net/profile/Tanveer_Karim)*, M.A. Helal, M.A. Alam, M.A. Ali, I. Ara,* ***S.H. Naqib***

 SN AppliedSciences (2021). <https://doi.org/10.1007/s42452-021-04214-2>

103. DFT insights into new B-containing 212 MAX phases: Hf2AB2 (A = In, Sn)

 *M.A. Ali, M.M. Hossain, M.M. Uddin, A.K.M.A. Islam, D. Jana,* ***S.H. Naqib\****

 Journal of Alloys and Compounds (2020). <https://doi.org/10.1016/j.jallcom.2020.158408>

102. NaInX2 (X = S, Se) layered materials for energy harvesting applications: First- principles insights into optoelectronic and thermoelectric properties

 *M.M. Hossain, M.A. Hossain, S.A. Moon, M.A. Ali, M.M. Uddin,* ***S.H. Naqib\*****, A.K.M.A. Islam, M. Nagao, S. Watauchi, I. Tanaka*

 Journal of Materials Science: Materials in Electronics (2020). <https://doi.org/10.1007/s10854-020-05131-7>

101. Ternary boride Hf3PB4: Insights into the physical properties of the hardest possible boride MAX phase

 *M.A. Ali, M.M. Hossain, A.K.M.A. Islam,* ***S.H. Naqib\****

 Journal of Alloys and Compounds (2020).

 <https://doi.org/10.1016/j.jallcom.2020.158264>

100. Chemically stable new MAX phase V2SnC: A damage and radiation tolerant TBC material

 *M.A. Hadi, M. Dahlqvist, S.-R.G. Christopoulos,* ***S.H. Naqib****, A. Chroneos, A.K.M.A. Islam*

 RSC Adv. (2020). DOI: 10.1039/d0ra07730e

99. Hf2CrZ (Z = B, Ga, In, Si, Ge, Sn) Heusler materials via DFT calculations: A study on structural, electronic and magnetic properties

 *[F. Dahmane](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642%22%20%5Cl%20%22%21)**,* [*C. Zouaneb*](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642#!)*,* [*A. Abdiche*](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642#!)*,* [*H. Meradji*](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642#!)*,* [*R. Khenata*](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642#!)*,* [*R. Ahmed*](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642#!)*,* [*A. Bouhemadou*](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642#!)*,* [*S. Bin Omran*](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642#!)*,* [*Sikander Azam*](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642#!)*,* [***S.H. Naqib***](https://www.sciencedirect.com/science/article/abs/pii/S2352214320300642#!)

 Computational Condensed Matter (2020). <https://doi.org/10.1016/j.cocom.2020.e00518>

98. Elastic, electronic, bonding, and optical properties of WTe2 Weyl semimetal: A comparative investigation with MoTe2 from first principles

 *B. Rahman Rano, Ishtiaque M. Syed,* ***S.H. Naqib\****

 Results in Physics (2020). <https://doi.org/10.1016/j.rinp.2020.103639>

97. Phase Stability, Mechanical, Electronic and Thermodynamic Properties of the Ga3Sc Compound: An *Ab-initio* Study

 *F. Semari, R. Boulechfar, F. Dahmane, A. Abdiche, R. Ahmed,* ***S.H. Naqib\*****, A. Bouhemadou, R. Khenata, X.T. Wang*

 Inorganic Chemistry Communications (2020). <https://doi.org/10.1016/j.inoche.2020.108304>

96. XPS, AES and UPS investigation of SnO2/Si and DFT based Theoretical Study within the mBJ-GGA Scheme

 *A. Mokadem, M. Bouslama, A. Ouerdane, R. Khenata, M. Guezzoul, A. Baizid, M. Abdelkrim, M.S. Halati, B. Kharroubi, K.B. Bensassi,* ***S.H. Naqib****, Xiaotian Wang*

 Surface Review and Letters (2020). <https://doi.org/10.1142/S0218625X20500481>

95. Pressure dependent elastic, electronic, superconducting, and optical properties of ternary barium phosphides (Ba*M*2P2; *M* = Ni, Rh): DFT based insights

 *Md. Maruf Mridha,* ***S.H. Naqib\****

 Physica Scripta (2020).

 <https://iopscience.iop.org/article/10.1088/1402-4896/abb968>

94. Dynamical stability, vibrational and optical properties of anti-perovskite *A*3*BX* (Ti3TlN, Ni3SnN and Co3AlC) phases: a first principles study

 *K. Das, M.A. Ali, M.M. Hossain,* ***S.H. Naqib****, A.K.M.A. Islam, M.M. Uddin*

 AIP Advances (2020). <https://doi.org/10.1063/5.0022376>

93. Electronic, elastic, thermodynamic and vibrational properties of Li6BeZrF12: Insights from DFT-based computer simulation

 *N. Serir, H. Khachai, F. Ckiker, A. Bouhemadou, Saleem Ayaz Khan, T. Ouahrani, Sikander Azam,* ***S.H. Naqib****, Ajaya K. Singh, R. Khenata*

 Computational Condensed Matter (2020). <https://doi.org/10.1016/j.cocom.2020.e00506>

92. Recently synthesized (Ti1−*x*Mo*x*)2AlC (0 ≤ *x* ≤ 0.20) solids solutions: Deciphering the structural, electronic, mechanical and thermodynamic properties via ab initio simulations

 *M.A. Ali,* ***S.H. Naqib\****

 RSC Adv. **10**, 31535-31546 (2020). <https://doi.org/10.1039/D0RA06435A>

91. Elastic behaviour and radiation tolerance in Nb-based 211 MAX phases

 *M.A. Hadi, S.-R.G. Christopoulos, A. Chroneos,* ***S.H. Naqib****, A.K.M.A. Islam*

 Mat. Today Commun. (2020). <https://doi.org/10.1016/j.mtcomm.2020.101499>

90. Optoelectronic properties of Nd3+ doped CaTa2O6: Insights from the GGA+U calculations

 *Sikander Azam, Muhammad Irfan, Zeesham Abbas, Saleem Ayaz Khan, Rabah Khenata, Shabbir Muhammad, Saifeldin M. Siddeeg,* ***S.H. Naqib\*****, Xiaotian Wang*

Optik (2020). <https://doi.org/10.1016/j.ijleo.2020.165270>

89. First-principles calculations of the structural, electronic, mechanical and thermodynamic properties of MAX Phase Mon+1GeCn (n = 1, 2, and 3) compounds

 *H. Mebtouche, O. Baraka, A. Yakoubi, R. Khenata, S.A. Tahir, R. Ahmed,* ***S.H. Naqib****, A. Bouhemadou, Xiaotian Wang*

Mat. Today Commun. (2020). <https://doi.org/10.1016/j.mtcomm.2020.101420>

88. DFT-based computer simulation of the physical properties of transparent conducting oxide of delafossite-type: AgInO2 and AgYO2

 *A. Ababou, F. Chiker, H. Khachai, R. Miloua, R. Khenata, R . Ahmed,* ***S.H. Naqib****, A. Bouhemadou, S. Bin Omran, F. Boukabrine, Xiaotian Wang*

Physica B (2020). <https://doi.org/10.1016/j.physb.2020.412584>

87. Exploring the potential use of Ca[LiAl3N4]:Eu2+ as phosphor-LED material: *ab- initio* calculations

 *Mahpara Ghazanfar, Sikander Azam, Muhammad Farooq Nasir, Saleem Ayaz Khan, Hafiz Usama, Muhammad Irfan, Shabbir Muhammad, Abdullah G. Al- Sehemi,* ***S. H. Naqib\*****, Rabah Khenata, Souraya Goumri-Said, X. T. Wang*

 Mat. Today Commun. (2020). <https://doi.org/10.1016/j.mtcomm.2020.101302>

86. Insights into the physical properties of a new 211 MAX phase Nb2CuC

 *M.A. Hadi,* ***S.H. Naqib****, A.K.M.A. Islam, A. Chroneos, R.V. Vovk*

J. Phys. Chem. Solids (2020). <https://doi.org/10.1016/j.jpcs.2020.109759>

85. Estimation of Cooper pair density and its relation to the critical current density in Y(Ca)BCO high-Tc cuprate superconductors

 *Nazir Ahmad,* ***S.H. Naqib\****

 Results in Physics (2020). <https://doi.org/10.1016/j.rinp.2020.103054>

84. *Ab initio* approach to the elastic, electronic, and optical properties of MoTe2 topological Weyl semimetal

 *B. Rahman Rano, Ishtiaque M. Syed,* ***S.H. Naqib\****

 Journal of Alloys and Compounds (2020). <https://doi.org/10.1016/j.jallcom.2020.154522>

83. *Structural, elastic, electronic, bonding, and optical properties of topological CaSn3 semimetal*

 *M.I. Naher,* ***S.H. Naqib\****

 Journal of Alloys and Compounds (2020). <https://doi.org/10.1016/j.jallcom.2020.154509>

82. *A first-principles investigation of electronic, optical and thermoelectric properties of the La2Pd2O5 compound*

 *Sikander Azam, Muhammad Irfan, Muhammad Waqas Iqbal, Muhammad Arshad Kamran, R. Khenata, T. Seddik, Banat Gul, M. Shoaib, M. Sohail, Saleem Ayaz Khan,* ***S.H. Naqib\*****, T. Ouahrani, Xiaotian Wang*

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81. *Insight View of Mechanical, Electronic and Thermodynamic Properties of the Novel Intermetallic RePt4In4 (Re = Eu, Gd, Tb, Dy, Ho) compounds via Ab Initio Calculations*

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*YBa2Cu3O7-x (x = 0 – 0.6)*

*M.T. Hoque,* ***S.H. Naqib****, A.K.M.A. Islam*

Proc. Int. Workshop on High-Tc Superconductors (2 – 6 Nov. 1998, Rajshahi, Bangladesh), p. 451.

8. *Carrier Pairing Relevant to Superconductivity within the Framework of Maximum Entropy Principle*

***S.H. Naqib\*****, S. Picozzi, A.N. Proto, F.B. Malik*

Proc. Int. Workshop on High-Tc Superconductors (2 – 6 Nov. 1998, Rajshahi, Bangladesh), p. 431.

9. *On the Complex Structure of Pressure Derivative of Tc vs. x of YBa2Cu3O6+x*

*R.S. Islam,* ***S.H. Naqib****, A.K.M.A. Islam*

Proc. Int. Workshop on High-Tc Superconductors (2 – 6 Nov. 1998, Rajshahi, Bangladesh), p. 414.

10. *Oxygen Depletion Dependence of Pressure Coefficient of Tc of YBCO (Y123)*

***S.H. Naqib****, M.T. Hoque, A.K.M.A. Islam*

# Advances in High Pressure Sci. & Tech. (Proc. IV NCHST, 11-13 Sept. 1997, IGCAR, Madras, India), p. 168.

# 11. *A New Tc Equation for Some 2D Cuprates*

# *A.K.M.A. Islam,* ***S.H. Naqib***

Proc. Int. Workshop on Cond. Mat. Physics (28 Oct. – 2 Nov. 1996, Rajshahi, Bangladesh), p. 206.

**Papers in the e-print (cond-mat) archive:**

# 1. *The Doping Phase Diagram of Y1-xCaxBa2(Cu1-yZny)3O7-δ from Transport Measurements: Tracking the Pseudogap below Tc (y = 0)*

# ***S.H. Naqib\*****, J.R. Cooper, and J.L. Tallon*

 cond-mat/0301375

2. *Scaling Relation for the Superfluid Density in Cuprate Superconductors*

*J.L. Tallon, J.R. Cooper,* ***S.H. Naqib****, and J.W. Loram*

cond-mat/0410568

3. *Interplay among superconductivity, pseudogap, and stripe correlations in high-Tc cuprates*

 ***S.H. Naqib\**** *and R.S. Islam*

cond-mat/1108.1446

4. *On possible reconciliation of anomalous isotope effect and non-phononic pairing mechanism in high-Tc cuprates*

***S.H. Naqib\**** *and R.S. Islam*

cond-mat/1206.1924

5. *Variation of the vortex activation energy, U(T, H), with hole content in YBa2Cu3O7-δ thin films*

 ***S.H. Naqib\**** *and R.S. Islam*

Cond-mat/1207.4312

6. *Zero-field in plane critical current density of YBa2Cu3O7-δ thin films*

 *M. Rakibul Hasan Sarkar and* ***S.H. Naqib\****

 cond-mat/1311.3373

7. *Doping dependent vortex activation energy and pseudogap in Y123*

 ***S.H. Naqib\**** *and R.S. Islam*

 cond-mat/1406.1324

8. *An investigation of the in-plane dc fluctuation conductivity of optimally doped and overdoped cuprates: implication and origin of the pseudogap*

 ***S.H. Naqib\**** *and R.S. Islam*

 cond-mat/1501.01841

**Papers accepted/submitted for publication:**

1. *The doping and disorder dependent variation of the isotope exponent in hole doped cuprates: A non-superconducting perspective*

***S.H. Naqib\**** *and R.S. Islam*

 Phys. Rev. B (2022)

2. *Effect of Pr substitution in Y1-xPrxBa2Cu3O7: evidence from superconducting transition and characteristic pseudogap temperatures*

***S.H. Naqib\**** *and R.S. Islam*

 Phys. Rev. B (2022)

3. *Superfluid density, pair-breaking, pseudogap and isotope exponent in hole doped cuprates*

 *I. Qabid, R.S. Islam,* ***S.H. Naqib\****

 Supercond. Sci. Technol. (2022)

**Invited and Peer Reviewed Book Chapter Contributions:**

1. Invited by the***Nova Science Publishers, New York, USA***, to contribute a chapter (up to 25000 words) for an edited collection entitled "***Superconducting Cuprates: Properties, Preparations and Applications***" **2009**. Chapter title: *Effect and evolution of the pseudogap in Y1-xCaxBa2Cu3O7-: probed by charge transport, magnetic susceptibility, and critical current density measurements* (Chapter-12, pp. 339 – 371)

2. Invited by the***Nova Science Publishers, New York, USA***, to contribute a chapter (up to 25000 words) for an edited collection entitled "***Recent Advances in Superconductivity Research***" **2013**. Chapter title: *Effects of non-magnetic defects in hole doped cuprates: exploration of the roles of the underlying electronic correlations* (Chapter-1, pp. 1 – 28)

**Presentations:**

1. *Van Hove scenario, lattice gas phenomenology, and the complex structure of doping dependence of dTc/dp of Y123*

 (Poster presented at the STATPHYS20 conference 1998, July 20-24, Paris, France)

2. *Effects of Pseudogap on the Transport and Magnetic Properties of Y1-xCaxBa2(Cu1-yZny)3O7-δ*

 (Poster presented at the Gordon Conference on Superconductivity, University of Oxford, UK, September 8 -13, 2001)

3. *Functional Dependence of the Critical Current on Temperature, Magnetic Field and Oxygen Concentration in Y1-xCaxBa2Cu3O7-δ Thin Films*

(Poster presented at the Topical ICMC workshop 2004, Feb. 10-13, University of Wollongong, Australia)

4. *The T-p Phase Diagram of Y1-xCaxBa2(Cu1-yZny)3O7-δ From Transport Measurements: Existence of the Pseudogap Below Tc0*

(Poster presented at the APS March meeting 2004, March 22-26, Montreal, Canada)

5. *Magnetic Field and Doping Dependence of the Pseudogap (T\*) of Y1-xCaxBa2(Cu1-yZny)3O7-δ : Existence of T\* Below Tc0*

(Poster presented at the Gordon Conference on Superconductivity, University of Oxford, UK, September 19 – 24, 2004)

6. *The Effects of the Pseudogap and Ca Substitution on the Static Magnetic Susceptibility of Y1-xCaxBa2Cu3O7-δ*

(Presented at the Quantum Matter portfolio meeting, 15 April 2005, Cavendish laboratory, University of Cambridge, UK)

7. *Strong and Unusual Effect of Zn Doping on the Magnetoresistance of Y1-xCaxBa2Cu3O7-δ Thin Films*

 (Presented at University of St. Andrews, Scotland, UK, June 2005)

8. *On Pseudogap and the Doping Dependence of the Magnetic Properties of Zn Substituted La2-xSrxCuO4*

(Presented at the Bangladesh Physical Society Conference 2006, 11 – 13 February, Dhaka, Bangladesh)

9. *Influence of the Hole Content and Oxygen Deficiency on Low-Temperature Critical Current of Y1-xCaxBa2Cu3O7-δ Thin Films*

(Presented at the Bangladesh Physical Society Conference 2006, 11 – 13 February, Dhaka, Bangladesh)

10. *Effect of the Pseudogap on the Uniform Magnetic Susceptibility of Y1-xCaxBa2Cu3O7-δ*

(Poster presented at the M2S-HTSC VIII Conference 2006, 9 – 14 July, Dresden, Germany)

11. *Magnetic Field Dependence of the Temperature Derivative of Resistivity: a Probe for Distinguishing the Effects of Pseudogap and Superconducting Fluctuations in Cuprates*

(Presented at the M2S-HTSC VIII Conference 2006, 9 – 14 July, Dresden, Germany)

12. *On the Pseudogap and Doping-Dependent Magnetic Properties of La2-xSrxCu1-yZnyO4*

(Presented at the M2S-HTSC VIII Conference 2006, 9 – 14 July, Dresden, Germany)

13. *Anomalous oxygen isotope effect in La2-xSrxCuO4*

(Presented at the Bangladesh Physical Society Conference 2007, 4 – 5 May, Dhaka, Bangladesh)

14. *Zn induced suppression of Tc in Y1-xCaxBa2(Cu1-yZny)3O7-δ superconductors: role of the pseudogap*

(Poster presented at the Bangladesh Physical Society Conference 2007, 4 – 5 May, Dhaka, Bangladesh)

15. *Influence of the Pseudogap on the Nernst Coefficient in Y0.9Ca0.1Ba2Cu3Oy*

(Poster presented at themeeting '**Exploring Quantum Matter: Visions and Opportunitie**s' 2 – 6 July, 2007, St. Andrews University, Scotland, UK)

16. *Effects of Zn substitution in La2-xSrxCu1-yZnyO4: a case of competing correlations*

(Presented at the conference on Superconductor-Insulator Transitions, 18 – 23 May, 2009, AS-ICTP, Trieste, Italy)

17. *Effects of non-magnetic defects in the presence of strong electronic correlations: a study of the Zn substituted La2-xSrxCuO4 superconductors*

(Presented at International Conference on Magnetism and Advanced Materials (ICMAM 2010), 3 – 7 March, 2010, Dhaka, Bangladesh)

18. *Quantum criticality and strongly correlated electronic materials*

(Presented at International Conference on Physics of Today, 15-16 March, 2012, Dhaka, Bangladesh)

19. *On superconducting fluctuations in high-Tc cuprates*

 (Presented at Department of Physics, University of Chittagong, Bangladesh, 13 May, 2013)

20. *Doping and disorder dependent isotope exponent in hole doped cuprates*

 (**Keynote presentation** at International Conference on Advances in Physics (ICAP) 2015, 18-19 April, 2015, Rajshahi, Bangladesh)

21. *Weyl Fermions and related topics*

 (Presented at Department of Physics, University of Rajshahi, Bangladesh, 26 August, 2015)

22. *Hydrides to cuprates – road towards room temperature superconductivity*

 (Presented at Department of Physics, University of Rajshahi, Bangladesh, 04 February, 2016)

23. *Enhanced high temperature conductivity in superconducting cuprates: pairing versus non-pairing correlations*

 (**Invited presentation** at International Conference on Physics 2016, Organized by the Bangladesh Physical Society, 10-12 March, 2016, Dhaka, Bangladesh)

24. *In-plane resistivity of hole doped cuprates: role of pseudogap and quantum criticality*

 (**Invited talk** presented at National Conference on Physics –2017, 5 – 7 January 2017, Dhaka, Bangladesh)

25. *Superconductivity in the presence of multiple orders*

 (**Invited talk** presented in the 15th Chittagong Conference on Mathematical Physics 2017, 16 March 2017, Chittagong, Bangladesh)

26. *Effect of multiple orders on the superconducting transition temperature of hole doped cuprates*

 (Presented at the International Conference on Materials Science and Nano-electrochemistry, 8-9 April 2017, University of Rajshahi, Bangladesh)

27. *Physics: teaching – learning*

 (**Keynote speech**, Department of Physics, Dhaka University, Bangladesh, at the workshop entitled *Teaching Methodology, Assessment Methods and Pedagogy*, November 5, 2017)

28. *Pair-breaking, pseudogap, and superconducting Tc of hole doped cuprates: role of superfluid density*

 (**Invited presentation** at the 2nd International Conference on *Physics for Sustainable Development & Technology* ICPSDT-2017, December 11-12, Chittagong, Bangladesh)

29. *Superconductivity - where the electrons pair*

 (**Keynote speech**, Department of Physics, Mawlana Bhashani Science and Technology University, Bangladesh, at the workshop entitled *Research and Academic Career in Physics*, January 20, 2018)

30. *Disorder induced low-energy quasiparticle states in hole doped cuprates: relevance to magnetic effect and Tc degradation*

 (**Invited presentation** at the *International Conference on Recent Advances in Mathematical and Physical Sciences (ICRAMPS 2018)*, Jahangirnagar University, Bangladesh, 27 – 29 January, 2018)

31. *Superconductivity – a tale of paired electrons*

 (**Invited presentation** at the *Bose Symposium – Satyen Bose and the World of Bosons*, University of Dhaka, Bangladesh, 24 February, 2018)

32. *Anomalous Magnetism and Tc Degradation in Disordered Hole Doped Cuprates: a Unified Description*

 (**Invited presentation** at the *International Conference on Physics* University of Dhaka, Bangladesh, 08 – 10 March, 2018)

33. *Philosophical Foundations of Scientific Research*

 (**Invited presentation** at the Workshop arranged by Space and Environment Research Center, Rajshahi University, 02 August, 2019)

34. *Superconductivity in a nutshell*

 (**Invited lecture** at Department of Physics, Bangladesh University of Engineering and Technology, Bangladesh, 24 August, 2019)

35. *A simple approach to calculate the superpair density in high-Tc cuprate superconductors and its relevance to the critical current density*

 (**Invited presentation** at the 4th Young Scientist Congress 2019, Bangladesh Academy of Sciences, Dhaka, Bangladesh, 13 – 15 December, 2019)

36. *Superpair density, pseudogap, and critical current density in high-Tc cuprate superconductors: interrelations and implications*

 (**Invited presentation** at the International Conference on Physics 2020, Dhaka, Bangladesh, 5 – 7 March, 2020)

37. *An Introduction to the Assumptions in Statistical Mechanics*

 (**Invited presentation** in the International Webinar arranged by Department of Physics, Pabna University of Science and Technology, Bangladesh, 21 June, 2020)

38. *Research Ethics and Some Related Aspects*

 (**Invited presentation** at the Workshop arranged by Space and Environment Research Center, Rajshahi University, 29 August, 2020)

39. *A Sneak Peek into the Black Holes*

 (**Invited presentation** in the Webinar arranged by Department of Physics, Pabna University of Science and Technology, Bangladesh, 14 October, 2020)

40. *A Critical Discussion on the Origin and Development of Experimental Science: Encounter with the Modern West*

 (**Keynote speech** in the Symposium on Professor Muin ud-din Ahmad Khan’s Origin and Development of Experimental Science: Encounter with the Modern West, Chittagong, Bangladesh, 19 December, 2020)

41. *Pseudogap in hole doped cuprates: role of the other gap in copper oxide high-Tc superconductors*

 (**Plenary lecture** in International e-Conference on Physics-2021, held by Bangladesh Physical Society (BPS), University of Dhaka, and Frontiers of Physics of US + Bangladesh Collaboration, Date: 5 – 7 February 2021)

42. *Bosons in high-Tc cuprates: where do we stand?*

 (**Invited speech** in International e-Conference on Physics 2021, 9 – 11 July 2021, University of Dhaka, Bangladesh)

43. *Road to room temperature superconductivity: A progress report*

 (**Academy Lecture**, arranged by Bangladesh Academy of Sciences (BAS), 10 January 2022)

44. *50 Years of Research in Bangladesh: Insights from the SCOPUS Database*

 (**Keynote speech**, Arranged by Scientific Bangladesh, 15 January 2022)

45. *Superpair Density and Critical Current in Hole Doped Cuprates: Robustness of Intrinsic Effects*

 (**Keynote speech** in International Conference on Materials for Emerging Technologies-2021 (ICMET-21), Organized by Department of Research Impact & Outcome, Division of Research & Development, Lovely Professional University (LPU), Punjab, India, 18 February 2022)

**Conference/Workshop attended and courses taken:**

1. *International Workshop on Recent Development in Condensed Matter Physics and Nuclear Science*

Rajshahi University (28 Oct. - 1 Nov., 1996), Bangladesh

2. *Low-temperature technique course*

Institute of Physics (IOP), Birmingham, November 1998, UK

3. *Winter School on Superconductivity*

University of Cambridge, January 1999, UK

4. *Superconductivity Group Annual Conference (IOP) and AGM*

 University of Birmingham, April 2000, UK

5. *Postgraduate Workshop in Magnetism: Transport and Thermodynamics*

Institute of Physics (IOP), London, November 2000, UK

6. *Superconductivity Group Annual Conference (IOP)*

 University of Birmingham, April 2001, UK

7. *Mesoscopic Phenomena in Superconductors (IOP)*

 Bristol University, September 2001, UK

8. *Superconductivity Group Annual Conference (IOP)*

 University of Birmingham, January 2002, UK

9. *19th General Conference of the Condensed Matter Division of the European Physical Society*

 Brighton, April 2002, UK

10. *Workshop on Critical Fluctuations in Spin and Charge Systems*

 University of Cambridge, 13 – 14 November 2008, UK

11. *Mathematical Challenges from the Physics of Soft and Biological Matter*

 AS-ICTP, 2 – 13 May 2011, Trieste, Italy

12. *Workshop on Advanced Oxide Interfaces*

 AS-ICTP, 9 – 13 May 2011, Trieste, Italy

13. *Workshop on Integrability and its Breaking in Strongly Correlated and Disordered systems*

AS-ICTP, 23 – 27 May 2011, Trieste, Italy

14. *Summer School on Quantum Many-Body Physics of Ultra-Cold Atoms and Molecules*

 AS-ICTP, 2 – 13 July 2012, Trieste, Italy

15. *Workshop on Effective Gravity in Fluids and Superfluids*

 AS-ICTP & International School for Advanced Studies (SISSA), 9 – 13 July 2012, Trieste, Italy

16. *Workshop on Quantum Simulations with Ultra-Cold atoms*

 AS-ICTP, 16 – 20 July 2012, Trieste, Italy

17. *Spring College on the Physics of Complex Systems*

 AS-ICTP, 26 May – 20 June 2014, Trieste, Italy

18. *Hands-On Research in Complex Systems School*

 AS-ICTP, 30 June – 11 July 2014, Trieste, Italy

19. *International Conference on Advances in Physics (ICAP) 2015*

 Department of Physics, University of Rajshahi, 18 – 19 April 2015, Bangladesh

20. *Workshop on Interacting Fermions: Precision Theory and Experiment*

 AS-ICTP, 06 – 10 July 2015, Trieste, Italy

21. *School and Workshop on Strongly Correlated Electronic Systems – Novel Materials and Novel Theories*

 AS-ICTP, 10 – 20 August 2015, Trieste, Italy

22. *The Bangladesh Physical Society (BPS) National Conference on Physics-2019* 07-09 February 2019, Dhaka, Bangladesh

23. *International Conference on Physics – 2020* (BPS), 5 – 7 March, 2020, Dhaka, Bangladesh.

**Current/past memberships:**

Institute of Physics (IOP), UK, American Physical Society (APS), Cambridge Philosophical Society (UK), Cambridge Commonwealth Trust (UK), Life-member of Bangladesh Physical Society (BPS), and Member of Asian Council of Science Editors (ACSE).

**Duty as Editor, Advisor, Referee, Organizer, and Columnist:**

Acting as a referee for large number of national and international journals including *Physical Review B* and *Physical Review Letters* published by the American Physical Society. One of the Editors of the *Global Journal of Physics Express* (published by the Simplex Academic Publishers, India). Member of the Advisory Board and Section Editor of the *Journal of Scientific Research* (ISSN 2070-0237 (Print); ISSN 2070-0245 (Online)). Member of the Editorial Board of the *Journal of Bangladesh Academy of Sciences*, published by the Bangladesh Academy of Sciences. Acted as the conference secretary of the ICAP 2015. Editor of the Conference Proceedings entitled *International Conference on Advances on Physics 2015*, published in the *Journal of Physics: Conference Series* by the Institute of Physics, UK. Invited Guest Editor of Special Issue of *Frontiers in Physics*. Frequent contributor in various national dailies on science education and related aspects in Bangladesh. Advisor, National Young Academy of Bangladesh (NYAB).

**Outreach activity:**

Acted as the convener of the Divisional Physics Olympiad Committee, Bangladesh, and as a member of the organizing committee of the Divisional Science Olympiad Committee of the Bangladesh Academy of Sciences (BAS).

**Research supervision:**

Number of M.Sc. students: 25

Number of M.Phil. students: 02

Number of Ph.D. students: 03

**Brief description of research and teaching interests:**

The level of interest in cuprate high-temperature superconductors exceeds that in any other field of inorganic science except semiconducting microelectronics and possibly micro-photonics. After more than thirty years since the discovery of these highly correlated electronic systems, there is still no agreement about the basic physics that leads to high superconducting transition temperatures or the anomalous normal-state properties associated with the complex phase behavior. One of the outstanding problems that remains to be resolved is the origin of the so-called *pseudogap phase* which is observed in a number of experimental study over a certain range of hole concentration per CuO2 planes (the common feature for all cuprate superconductors). Contrary to one of the basic tenets of the Fermi-liquid theory, low-energy excitations are gapped along certain parts of the Brillouin zone when the pseudogap is present. It is widely believed that understanding pseudogap can lead to the understanding of the mechanism of cuprate superconductivity.

I have done extensive transport and magnetic measurements on Zn and Ca substituted Y123 (sintered and c-axis oriented thin film) and Zn substituted La214 compounds over a large range of carrier concentrations and disorder contents in the last twenty-five years. I have investigated the role of pseudogap on the charge transport and magnetic properties of high-Tc cuprates over extended range of hole content and studied their possible connections to a quantum critical point. I am also interested in critical currents and currently studying its doping and disorder dependences in cuprate superconductors. This part of my research has industrial implication. Furthermore, I am studying magneto-transport properties of oxygen isotope substituted cuprate superconductors. This will help clarifying possible roles played by phonons on various normal and superconducting state properties. Recently I have started working on Nernst effect of pure and Zn-substituted Y(Ca)123. This would be helpful in clarifying the possible roles played by superconducting fluctuations and disorder at different hole concentrations in the CuO2 planes. Besides, I am working on the first-principles electronic band structure calculations and investigations of thermo-physical properties of iron-oxypnictide superconductors, recently discovered ternary superconducting compounds, high-Tc hydrides, industrially important MAX phase nanolaminates, intermetallic compounds, energy harvesting semiconducting compounds, and topological insulators and semimetals. I have active research collaborations with the Quantum Matter group, Cavendish laboratory, University of Cambridge, UK, Materials Science group, University of Coventry, UK, Imperial College, UK, Queensland University of Technology, Australia and Mascara University, Algeria.

**So far, I have published over 125 papers on various aspects of superconductivity in cuprates and other recently discovered novel superconducting materials, on technologically important MAX phase nanolaminates, topological insulators and semimetals, and other compounds with prospect of large scale industrial applications. These published papers have around 2200 citations, till date. Two of my papers on the pseudogap in superconducting cuprates and its possible connection with an incipient quantum critical point have been cited over 250 times.**

Based on the productivity, citations by peers, and research outcomes, the computational condensed physics laboratory under my guidance has been able to establish itself as one of the top physics labs in this country.

I believe teaching is one of the most beneficial forms of intellectual interaction that not only stimulates the minds of the students but also broadens the knowledge of the teacher to a great extent. I would like to be a teacher who listens to his students and encourages them in every possible way so that learning becomes a matter of a very active participation from part of the students. Inspiring young minds to embrace new ideas is the most rewarding part of teaching and gives the teacher immense satisfaction. I would love to explore new research possibilities with the students, experts, and other faculty members of the department, given the chance.

**Names and addresses of three academic referees:**

1. Professor J.L. Tallon

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1. Dr. J.R. Cooper

Emeritus Professor

 Quantum Matter group, Cavendish Laboratory

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3. Dr. Sultana Nahar

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**Web-links:**

<https://scholar.google.com/citations?user=r10IiGoAAAAJ&hl=en>

<https://www.researchgate.net/profile/S-Naqib>