CV

a) Name: Shatabda BHATTACHARYA

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Date of Birth: 08th May 1990 Sex: Male
Present Affiliation: JSPS Fellow, Osaka University, JAPAN
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Research Interest: *Magnetism, 2D systems, Molecular complexes, Transport*

b) Professional Experiences:

Osaka University, Toyonaka, Japan **30/03/2022 --Present**
JSPS International Post-Doctoral Fellow
Molecular Electronics Division, Graduate School of Engineering Sciences
Supervisor: Prof. Hirokazu TADA
Project Title: Molecular Magnet Embedded Hybrid 2D Nanostructure

S.N. Bose National Centre for Basic Sciences, India **1/10/2021--30/12/2021**
Visiting Scientist (Full term)
Department of Condensed Matter Physics and Material Sciences, Kolkata, India
Title: Spin state dependent conductivity measurement in SCO/Graphene heterostructure

*** Parental leave from April, 2021 to Sep, 2021**

Seoul National University, Seoul, South Korea **9/12/2019 – 18/03/2021**
Brain Korea (BK) Global Post. Doc. Research Associate, Centre for Spin Dynamics and Spin-Wave Devices, Nanospinics Lab.
Supervisor: Prof. Sang-Koog KIM
Title: Study of 2D based thermo-magnetic memory devices and spin dynamics at interface

Indian Association for the Cultivation of Science, Kolkata, India **02/02/2019 – 25/09/2019**
Extended Senior Research Fellow, Supervisor: Prof. Shyamal K. SAHA
Dept. of Materials Science

Osaka University, Toyonaka, Japan **12/11/2018 – 01/02/2019**
Visiting Scientist (post Ph.D.), Molecular Electronics Lab, Graduate School of Engineering Sciences
Supervisor: Prof. Hirokazu TADA
Project Title: To study molecular magnet embedded 2D hybrid nanostructures

Indian Association for the Cultivation of Science, Kolkata, India **01/11/2013 – 10/11/2018**
Research Fellow at School of Materials Sciences
Ph.D. Supervisor: Prof. Shyamal K. Saha
Ph.D. Thesis Title: *Magnetic and Electronic Properties of Two-Dimensional Nanostructures*

Indian Association for the Cultivation of Science, Kolkata, India **10/07/2013 – 30/10/2013**
Institute Research Fellow at Department of Theoretical Physics
Supervisor: Prof. Sudhanshu Sekhar MANDAL
Project Title: To study the anomalous quantum hall effect in topological insulators

The University of Burdwan, West Bengal, India **01/10/2012 – 30/06/2013**
UGC Major Research Project Fellow at Dept. of Physics
Supervisor: Prof. Partha MITRA

Project Title: Microstructural and gas sensing characterization of nanocrystalline spinel oxides for some toxic and combustible gases

c) Educational Qualifications:

- **Ph.D. (Science)** 01/11/2013--25/09/2019

[Indian Association for the Cultivation of Science (IACS), India
degree awarded (25.09.2019) from Jadavpur University (JU), Kolkata- India]
Thesis title: Magnetic and Electronic Properties of Two-dimensional Nanostructures
Advisor: Prof. Shyamal K. Saha, Dept. of Materials Science

- **M.Sc. in Physics (Specialization: Materials Science)** 01/07/2010--3/08/2012

Dept. of Physics, University of Burdwan, India
(First Class, 76.5%, University Medallist Rank 2nd)
Master Thesis: Linear antenna array theory
Advisor: Prof. Atis C. Mandal

- **B.Sc. in Physics** (Honours-Major) 12.07.2007--11.06.2010

Burdwan Raj College, Burdwan, India
with Mathematics and Chemistry (First Class, 71%, University Medallist Rank 5th)

d) List of Research Grants acquired during past years.

1. Scheme title: Grant-in-Aid for JSPS Fellows (PD Standard) KAKENHI
Duration of the grant: 30.03.2022-31.03.2024 Grant Id: P20070
Project research theme: Basic Review Section 29020: Thin film/surface and interfacial physical properties-related
Title: Fabrication of hybrid two-dimensional nanostructures containing molecular magnets for novel high-temperature spintronics devices
Budget Amount: ¥2,300,000 (Direct Cost: ¥2,400,000)
Researcher (PI): BHATTACHARYA Shatabda, Osaka University, Japan

2. Scheme title: Brain Korea (BK) 21 Plus Global Research Fund (NRF), South Korea, Materials Division for Creating Global Leaders
Duration of the grant: 01.12.2019-30.08.2021 Grant Id: 119-82-60220/2019
Title: Charge Transfer Induced Interfacial Magnetization Dynamics for Memory Applications
Budget Amount: 30million KRW
Joint-PIs: Prof. Sang-Koog KIM, & Dr. Shatabda BHATTACHARYA, Spin Dynamics & Spin Wave Devices, Dept. of Materials Science and Engineering, Seoul, South Korea

e) Oral presentation/Invited speaker at reputed international conferences:

- **Oral presentation at European Materials Research Society (E-MRS), '**Understanding the role of 2D surface in magnetic exchange coupling of molecular network**'** Fall Conference**,** Sep 2023, Warsaw, Poland
- **KeyNote Invited speaker** at The 4th International Symposium on Nano Technology and Smart Materials for Environmental Applications (ISNSEA 2023), Jeju, South Korea, September, 2023.
- **Oral presentation at Materials Research Society (MRS), '**Field-induced cooperativity tuning in a Fe-triazole molecular complex on graphene**'** Spring Conference April 2023 at San Francisco, California, USA
- **KeyNote Invited speaker** at International Forum on Nanotechnology and Applications (NANOFORUM2023), San Diego, USA, December, 2023 (scheduled).
- **Oral presentation at Korean Magnetics Society Annual Conference**, "Thermoremnant memory effect at 2D hybrid interface" Seoul, South Korea, January, 2020.
- **Invited Lecture at** JSPS Science Dialogue program, 'Let's see small through NANO' Fukui, Japan March 2023.

- **Invited Lecture at** JSPS Int'l Orientation program, Tokyo, 'Research integrity as experimentalist' Japan August 2022.
- **Poster** Presentation in National Symposium in Condensed Matter, 2018
- **Poster** Presentation in IACS-APCTP (Asia Pacific Center for Theoretical Physics), Kolkata, Shatabda Bhattacharya, India 2017
- **Poster** Presentation in Materials Day-Materials Research Society of India (MRSI), India 2016
- **Oral**: "Realization of 2D ferromagnetism using charge transfer effect at the interface", S. Bhattacharya* and S. K. Saha, 5th International Conference on Soft Materials (ICSM), Jaipur, India. May 2016
- **Oral**: "Charge transfer induced magnetization dynamics at the interface", S. Bhattacharya*, Nano India International Conference, Tamilnadu, India, March, 2015

f) Awards & Participations

International Fellowship/Grant Awards:
- **JSPS International** Post-doctoral Fellowship in 2022-2024. [ID: P20070, FY2020]
- **Brain Korea (BK) 21 Plus Global** Post-doctoral Fellowship in Jan 2019. [119-82-60220]

National Academic Awards:
- **Awarded DST INSPIRE Fellow (JRF)** (Govt. of India) for pursuing Ph.D. program.
- **Awarded Graduate Aptitude Test in Engineering (GATE)** in India 2013
- **University Rank holder (Medal)** during **B.Sc.** (2nd) (2010) and **M.Sc.** (5th) (2012).
- **DST INSPIRE Scholarship** (Govt. of India) from B.Sc. to M.Sc.

Awards at Conferences:
• **Best Oral presentation award** in Nano India International Conference, Jan, 2015.
• **Best Poster presentation award** in Materials Day 2016 at IACS, Kolkata.
• **Best Poster presentation award** in National Symposium in Condensed Matter, 2017.
• **Best Oral presentation award** in International Conference on Soft Materials (ICSM), Dec, 2016.

g) Membership in Scientific Community

- European Research Society (E-MRS), Strasbourg, France, May 2023-Present
- Materials Research Society (MRS), PA, USA-Membership April 2023-Present
- Materials Research Society of India (MRSI), India. Membership March 2019-Present
- Korean Magnetics Society, Seoul, South Korea: member
- Brain-Korea (BK) Alumni Fellow, Seoul, South Korea

h) Societal Contributions & Affiliations in Scientific Journals

- Journal Reviewer for **Journal of Power Sources**
- Journal Reviewer for **Journal of Magnetism and Magnetic Materials**
- Journal Reviewer for **Applied Physics Letters**
- Journal Reviewer for **Journal of Physics D: Applied Physics**
- Journal Reviewer for **Journal of Hazardous Materials**
- *Editorial Board member* at **Environmental Sciences and Sustainability journal**
- *Editorial Board member* at **Academia Green Energy Journal**

i) Supervising & mentoring: Guided 4 Ph.D. students during post thesis submission periods at IACS and helped them regarding initial experimental setups etc. Co-supervised 2 Ph.D.s during my post-doctoral levels.

j) scientific research skills

Experimental

Synthesis techniques

1. CVD growth of 2D materials/hybrid
2. Chemical synthesis (Reflux,Hydrothermal,SILAR etc.)
3. High temperature sintering process (Furnaces,3-Zone, Tubular, MW)

4. Mechanical alloying Ball Milling process

Materials Characterization expertise

1. PXRD and Rietveld Refinement for microstructural, strain analysis
2. TEM (HR & Cross sectional) (JEOL 2011 & 2100 Model)
3. SEM analysis (Surface & Cross sectional)
4. AFM (SPM) (Contact/Non-contact/AC-mode)

Spectroscopic analysis

1. XPS (Orbital binding energy/CT states)
2. RAMAN/SERS analysis
3. PL (Low temp., Solid powder Integrated sphere)/UV-Vis
4. Others (FTIR, DSC, DTA-TGA, EPR etc.)
5. ICPMS elemental state

Magnetic and Electronic Property Measurement

1. MPMS (SQUID (XL5, XL7), SQUID-VSM) (DC & AC)
2. PPMS transport measurement (Dynacool, M-6000)
3. AC transport measurement High-Freq. Impedance Analyzer
4. Wire-bonder, e-Beam lithography/ photolithography

Energy based research

1. Supercapacitor (hybrid) and Li-ion/Li-polymer battery (coin cell)
2. Battery tester and Galvanostatic charge-discharge analysis
3. Cyclic voltammetry (CV)
4. Hydrogen evolution (HER)
5. Glove-Box inert-atmosphere technique