Baidehish Sahoo

Welding & Joining Laboratory
Indian **I**nstitute of **T**echnology Kharagpur,
Kharagpur,West Bengal, India-721302.
Email: baidehish.sahoo1367@gmail.com
Contact: +91-7479010570,7205424605
ORCID, Google Scholar, Researchgate, Linkedin

EDUCATION

- Indian Institute of Technology Kharagpur, India — Year:2021
  Ph.D in Mechanical Engineering — CGPA-7.5/10
  Thesis Title: "Composite coatings of carbonaceous nanomaterials on aluminium substrates by solid state processing".
- National Institute of Technology Rourkela, India — Year: 2013
  M.Tech in Metallurgical & Materials Engineering — CGPA-8.31/10
  Thesis Title: "Recrystallization Texture development in CP-Titanium"
- Eastern Academy of Science & Technology Bhubaneswar, India — Year: 2009
  B.Tech in Mechanical Engineering — CGPA-7.31/10
  Project Title: "Manufacturing & Performance Evaluation of All Terrain Robot "

RESEARCH INTEREST

- Surface Modification
- Resistance Spot Welding,Friction Stir Welding/processing
- Weld strength Enhancement
- Mechanical characterization
- Aluminium Metal Matrix composite (AMC), Polymer Matrix composite(PMC),Surface Composite fabrication
- Wear & Friction property analysis
- Tribological characterization

ACHIEVEMENTS

- Received travel grant from Indian government for attending E-MRS 2018, Strasbourg, France.
- Received fellowship grant from MHRD,India during 2015-2020.
- Received fellowship grant from MHRD,India during 2011-2013
- Scored 545 in Graduate Aptitude Test Engineering (GATE-2013) with AIR 2060. [Link]

PUBLICATIONS

JOURNALS

- **B. Sahoo,** J. Joseph, A. Sharma, J. Paul**, "*Surface modification of aluminium by graphene impregnation*",** Materials & Design**.** 116 (2017) 51–64.
- **B. Sahoo,** J. Paul**, "*Solid state processed Al-1100 alloy/MWCNT surface nanocomposites*",** Materialia**.** 2 (2018) 196–207

- **B. Sahoo,** J. Joseph, A. Sharma, J. Paul**, "*Particle size and shape effects on the surface mechanical properties of aluminium coated with carbonaceous materials*",** Journal of Composite Materials**.** 53 (2019) 261–270**.**
- **B. Sahoo,** D. Narsimhachary, J. Paul**, "*Tribological Behavior of Solid-State Processed Al-1100/GNP Surface Nanocomposites*",** Journal of Materials Engineering and Performance. 27 (2018) 6529–6544.
- **B. Sahoo,** D. Narsimhachary, J. Paul**, "*Surface mechanical and self-lubricating properties of MWCNT impregnated aluminium surfaces*",** Surface Engineering. 35 (2019) 970–981.
- **B.Sahoo,** D. Narsimhachary, J. Paul**,"*Tribological characteristics of aluminium-CNT/graphene/graphite surface nanocomposites: a comparative study*",** Surface Topography: Metrology and Properties. 7 (2019) 34001.
- **B. Sahoo**, R. Kumar, J. Joseph, A. Sharma, J. Paul**, "*Preparation of aluminium 6063-graphite surface composites by an electrical resistance heat assisted pressing technique*",** Surf. Coatings Technol. 309 (2017) 563–572.
- **B. Sahoo,** S.D. Girhe, J. Paul**, "*Influence of process parameters and temperature on the solid state fabrication of multilayered graphene-aluminium surface nanocomposites*",** J. Manuf. Process. 34 (2018) 486–494**.**
- A. Sharma, S. Sagar, R.P. Mahto, **B. Sahoo,** S.K. Pal, J. Paul**, "*Surface modification of Al6061 by graphene impregnation through a powder metallurgy assisted friction surfacing*",** Surf. Coatings Technol. 337 (2018) 12–23.
- A. Sharma, V.M. Sharma, **B. Sahoo,** S.K. Pal, J. Paul**, "*Effect of multiple micro channel reinforcement filling strategy on Al6061-graphene nanocomposite fabricated through friction stir processing*",** J. Manuf. Process. 37 (2019) 53–70.
- A. Sharma, V. Mani Sharma, **B. Sahoo,** J. Joseph, J. Paul, **"*Study of Nano-Mechanical, Electrochemical and Raman Spectroscopic Behavior of Al6061-SiC-Graphite Hybrid Surface Composite Fabricated through Friction Stir Processing*",** J. Compos. Sci. 2 (2018) 32.
- A. Sharma, D. Narsimhachary, V.M. Sharma, **B. Sahoo,** J. Paul**, "*Surface modification of Al6061-SiC surface composite through impregnation of graphene, graphite & carbon nanotubes via FSP: A tribological study*",** Surf. Coatings Technol. 368 (2019) 175–191.
- A. Sharma, V.M. Sharma, **B. Sahoo**, J. Joseph, J. Paul, **"*Effect of exfoliated few-layered graphene on corrosion and mechanical behaviour of the graphitized Al–SiC surface composite fabricated by FSP*",** Bull. Mater. Sci. 42 (2019) 204.
- T. Das, **B. Sahoo,** P. Kumar, J. Paul**, "*Effect of graphene interlayer on resistance spot welded AISI-1008 steel joints*",** Mater. Res. Express. 6 (2019) 0865c3.
- J. Joseph, A. Sharma, **B. Sahoo,** J. Paul, A.M. Sidpara**, "*PVA/ MLG/ MWCNT hybrid composites for X band EMI shielding – Study of mechanical, electrical, thermal and tribological properties*",** Mater. Today Commun. 23 (2020) 100941.
- J. Joseph, A. Sharma, **B. Sahoo,** A.M. Sidpara, J. Paul**, "*Graphene/Magnetite (Fe3O4) Hybrid Fillers for Thermoplastic Composites: X-Band Electromagnetic Interference Shielding Characteristics*",** J. Electron. Mater. (2020).

CONFERENCES

- **B. Sahoo,** A.Sharma ; J. Joseph ; J. Paul, "**Surface modification of Al-1100 alloy through electrical resistance heat assisted pressing technique: A mechanical and tribological study**", *European materials research society Spring meeting* 2018, Strasbourg, France, 18-22nd June, 2018.

RESEARCH EXPERIENCE

- **Ph.D Researcher (2014-2021)**
  Indian Institute of Technology Kharagpur, India
  Advisor: Prof. Jinu Paul
    - Established resistance spot welding technique as a surface modification technique and optimized current and time conditions for surface modification of aluminium.
    - Used the surface modification technique with different allotropes of carbon i.e. from 1D-MWCNT to 3D-Graphite.
    - Employed different characterization techniques (XRD, SEM, TEM, BET analysis, Raman Spectroscopy, Micro hardness, Nano Indentation) for powder particle as well as surface modified aluminium to find out the reasons of improved mechanical behaviour.
    - Analyzed the tribological behaviour of surface modified aluminium.
    - Compared the effect of different carbon forms on surface mechanical and tribological behaviour of aluminium.

- **M.Tech Researcher (2011-2013)**
  National Institute of Technology Rourkela, India
  Advisor: Dr. Santosh Kumar Sahoo
    - Analysed the texture development in a accumulative roll bonding (ARB) processed cp-titanium.
    - Compared the recrystallization texture development in cold rolled & annealed cp-titanium.

TEACHING EXPERIENCE

- **Laboratory Assistant**

1. Workshop (Welding Section) July 2015 - Nov. 2015

Laboratory Supervisor: Prof. Jinu Paul

- Introduction to basic welding processes,basic welding and cutting with oxyacetelene gas welding,simple welding with arc welding for under graduate students.

2. Metrology Laboratory Jan 2016 -May 2016,
Jan 2017 -May 2017,
Jan 2018 -May 2018

Laboratory Supervisor: Prof. S.K.Pal & S.K.Panda

- Introduction to metrology, measurement of included angle of V block, external taper of a tapered plug gauge, etc., measure the eccentricity of crankshaft and all essential dimensions of jig plate for under graduate students.

3. Welding Laboratory

July 2016 -Nov 2016,
July 2017 - Nov 2017,
July 2018 - Nov 2018

Laboratory Supervisor: Prof. Jinu Paul

- Introduction to advanced welding processes, welding with resistance spot welding at different current settings, measurement of nugget diameter with light microsope, corealting nugget size with the applied current

4.Supervised B.Tech and M.Tech students with their project work.

5. Worked as assistant professor from 05/07/2013 to 19/11/2014 at SIET,Bhubaneswar.[Link]

SKILLS

- **Laboratory**
  - **Proficients:** Resistance spot welding, Friction stir welding/processing, surface composite, Heat treatment processes, Chemical techniques for material development, Powder technology/ Mechanical alloying, XRD, SEM, TEM, STEM, EBSD, XPS, BET analysis, Raman Spectroscopy, AFM,3D-OSP Hardness, micro hardness, compression, tensile tests, Nano Indentation,Tribology testing (coefficient of friction & wear rate analysis).
- **Software:**
  - **Proficients:** Origin,MS Word,Excel,Power Point etc.
  - **Familier:**Solidworks, Ansys,Pro-E, Auto CAD,LabVIEW,and C/C++.

EXTRA CURRICULAR ACTIVITIES

- Attended CNC Technology and Metrology course at CTTC. [Link]
- Attended Pro-E course at CTTC. [Link]
- Carried out a project on Manufacturing of hand injection mould. [Link]

RELEVENT COURSE WORK

- Precision and Micro Manufacturing
- Modern manufacturing processes
- Soft computing applications

PROFESIONAL MEMBERSHIP

- Life time member of The Indian society for technical Education (Number-**98165**).

DECLARATION

I solemnly declare that all the above furnished information is free from error to the best of my knowledge and belief.

Baidehish Sahoo