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Google Scholar

<https://scholar.google.com/citations?user=eo-hRU0AAAAJ&hl=en>

## Keywords

Bio-based materials research; wood nanomaterials; nanocellulose; cellulose chemistry, fiber surface modification, chitin; nanocomposites; pulp and paper; optical properties of wood.

## Education

- 2019: Doctor of Agricultural Science (Functional bio-based materials), Kyoto University, Japan.  
(Thesis: Optically transparent nanocellulose-reinforced composites *via* Pickering emulsification)
- 2016: Master of Agricultural Science (Bio-based materials), Kyoto University, Japan.  
Grade: 2.93/3.00  
(Thesis: Optically transparent materials from cellulose nanofiber (CNF)-stabilized resin-in-water Pickering emulsion)
- 2013: Master of Science in Pulp and Paper Technology, Asian Institute of Technology, Thailand.  
Grade: 3.90/4.00  
(Thesis: Fiber surface modification using layer-by-layer (LbL) technique)
- 2012: Master of Science in Forestry (Wood Science), Khulna University, Bangladesh.  
Grade: 3.63/4.00  
(Thesis: Preparation of chitin nanofibers and nanocomposite from shrimp shell wastage)
- 2010: Bachelor of Science (Honors) in Forestry (Wood Science), Khulna University, Bangladesh.  
Grade: 3.81/4.00  
(Thesis: Feasibility study on coconut palm (*Cocos nucifera* L.) stem, leaf mid-rib and coir pith as raw materials for particleboard manufacturing)
- 2004: Higher Secondary Certificate (HSC), Science group, Govt. Rajbari College, Dhaka Board
- 2001: Secondary School Certificate (SSC), Science group, Rajbari Govt. High School, Dhaka Board

## Current Status & Work Experiences

- June 2022– present : Senior Research Officer, Bangladesh Forest Research Institute, Chattogram.
- Oct 2019–Mar 2022: Postdoctoral Researcher, Research Institute for Sustainable Humanosphere (RISH), Kyoto University, Japan.  
(Research theme: Wood-based advanced nanomaterials)
- Aug 2013–Dec 2013: Consultant, IT & Engineering Unit, AIT Extension, Asian Institute of Technology, Thailand.  
(Job description: International training program management and report writing)
- Sep 2012–Mar 2013: Student/Research Assistant, Pulp and Paper Technology Department, Asian Institute of Technology, Thailand.
- May 2012–Jul 2012: (Job description: Laboratory supervision and laboratory course teaching; Project supervision; CAD drawing of an energy-efficient feedstock dryer)

### Analytical Characterization and Other Skills

1. Electron microscopy (FE-SEM, TEM), X-ray powder diffraction (XRD), X-ray micro-computed tomography ( $\mu$ CT), Thermomechanical analysis (TMA), Dynamic thermomechanical analysis (DTMA), Mechanical testing (Instron UTM), Thermogravimetric analysis (TGA), Elemental analysis, Fourier-transform infrared spectroscopy (FTIR), UV-VIS-NIR spectrophotometry, etc.: Sample preparation, instrument handling, and instrument-generated data analysis.
2. Self-trained in AutoCAD and AutoCAD Plant 3D.

### English Language Proficiency

International English Language Testing System (IELTS), overall band score 7.0 (Nov 2013)

### Publications

Journal papers and book chapters:

1. **Subir Kumar Biswas**, Xianpeng Yang, Hiroyuki Yano and Md. Iftexhar Shams. Bionanofiber-reinforced transparent nanocomposites for future applications (Chapter 32), in Applications of Multifunctional Nanomaterials. Eds. Sabu Thomas, Nandakumar Kalarikkal, and Ann Rose Abraham. *Elsevier*, Amsterdam, **2022**. [accepted]
2. Xianpeng Yang, **Subir Kumar Biswas**,\*\* Jingquan Han, Supachok Tanpichai, Mei-Chun Li, Chuchu Chen, Sailing Zhu, Atanu Kumar Das and Hiroyuki Yano. Surface and interface engineering for nanocellulosic advanced materials, *Advanced Materials*, 2002264, **2021**. \*\*=**co-first author and corresponding author**.
3. Cheng Wang, **Subir Kumar Biswas** and Satoko Okubayashi. Polyethylenimine-Impregnated Mesoporous Delignified Wood with High Mechanical Strength for CO<sub>2</sub>/N<sub>2</sub> Selective Adsorption, *ACS Applied Nano Materials*, **3**, 5499–5508, **2020**.
4. Supachok Tanpichai\*, **Subir Kumar Biswas**\*, Suteera Witayakran and Hiroyuki Yano. Optically transparent tough nanocomposites with a hierarchical structure of cellulose nanofiber networks prepared by Pickering emulsion method, *Composites Part A* **132**, 105811, **2020**. \*=**co-first author**.
5. Huixiang Wang, **Subir Kumar Biswas**, Sailing Zhu, Ya Lu, Yiying Yue, Jingquan Han, Xinwu Xu, Qinglin Wu and Huining Xiao. Self-Healable Electro-Conductive Hydrogels Based on Core-Shell Structured Nanocellulose/Carbon Nanotubes Hybrids for Use as Flexible Supercapacitors, *Nanomaterials* **10** (1), 112, **2020**.
6. Xianpeng Yang, **Subir Kumar Biswas**, Hiroyuki Yano and Kentaro Abe. Fabrication of ultrastiff and strong hydrogels by in situ polymerization in layered cellulose nanofibers, *Cellulose* **27**, 693–702, **2020**.
7. Yuanyuan Chen, Kaiyue Lu, Yuhan Song, Jingquan Han, Yiying Yue, **Subir Kumar Biswas**, Qinglin Wu and Huining Xiao. A Skin-Inspired Stretchable, Self-Healing and Electro-Conductive Hydrogel with a Synergistic Triple Network for Wearable Strain Sensors Applied in Human-Motion Detection, *Nanomaterials* **9** (12), 1737, **2019**.
8. Supachok Tanpichai, **Subir Kumar Biswas**, Suteera Witayakran and Hiroyuki Yano. Water Hyacinth: A Sustainable Lignin-Poor Cellulose Source for the Production of Cellulose Nanofibers, *ACS Sustainable Chemistry & Engineering*, **7** (23), 18884-18893, **2019**.
9. Xianpeng Yang, Ting-Hsuan Ku, **Subir Kumar Biswas**, Hiroyuki Yano and Kentaro Abe. UV grafting: surface modification of cellulose nanofibers without the use of organic solvents, *Green Chemistry*, **21** (17), 4619–4624, **2019**.
10. **Subir Kumar Biswas**, Hironari Sano, Xianpeng Yang, Supachok Tanpichai, Md. Iftexhar Shams and Hiroyuki Yano. Highly Thermal-Resilient AgNW Transparent Electrode and Optical Device on Thermomechanically Superstable Cellulose Nanorod-Reinforced Nanocomposites, *Advanced Optical Materials*, **7** (15), 1900532, **2019**.

11. Xianpeng Yang, **Subir Kumar Biswas**, Hiroyuki Yano and Kentaro Abe. Stiffened Nanocomposite Hydrogels by Using Modified Cellulose Nanofibers via Plug Flow Reactor Method, *ACS Sustainable Chemistry & Engineering*, **7** (10), 9092–9096, **2019**.
12. **Subir Kumar Biswas**, Supachok Tanpichai, Suteera Witayakran, Xianpeng Yang, Md. Iftekhar Shams and Hiroyuki Yano. Thermally Superstable Cellulosic-Nanorod-Reinforced Transparent Substrates Featuring Microscale Surface Patterns, *ACS Nano*, **13** (2), 2015–2023, **2019**.
13. Xianpeng Yang, Kentaro Abe, **Subir Kumar Biswas** and Hiroyuki Yano. Extremely stiff and strong nanocomposite hydrogels with stretchable cellulose nanofiber/poly(vinyl alcohol) networks, *Cellulose*, **25** (11), 6571–6580, **2018**.
14. **Subir Kumar Biswas**, Hironari Sano, Md. Iftekhar Shams and Hiroyuki Yano. Three-Dimensional-Moldable Nanofiber-Reinforced Transparent Composites with a Hierarchically Self-Assembled “Reverse” Nacre-like Architecture, *ACS Applied Materials and Interfaces*, **9** (35), 30177–30184, **2017**.
15. **Subir Kumar Biswas**, Md. Iftekhar Shams, Atanu Kumar Das, Md. Nazrul Islam and Mousa M. Nazhad. Flexible and Transparent Chitin/Acrylic Nanocomposite Films with High Mechanical Strength, *Fibers and Polymers*, **16** (4), 774-781, **2015**.
16. Md. Mamunur Rashid, Atanu Kumar Das, Md. Iftekhar Shams, **Subir Kumar Biswas**. Physical and mechanical properties of medium density fiber board (MDF) fabricated from banana plant (*Musa sapientum*) stem and midrib, *Journal of the Indian Academy of Wood Science*, **11** (1), 1–4, **2014**.
17. Khalil Rahman, Md. Asaduzzaman, Md. Mizanur Rahman, Atanu Kumar Das and **Subir Kumar Biswas**. Physical and mechanical properties of ghora neem (*Melia azedarach*) plywood, *Bangladesh Journal of Scientific and Industrial Research*, **49** (1), 47-52, **2014**.
18. Atanu Kumar Das, Md. Azharul Islam, Md. Iftekhar Shams, Md. Obaidullah Hannan and **Subir Kumar Biswas**. Physical and mechanical properties of UF bonded and without binding agent bagasse MDF, *Asian Journal of Applied Sciences*, **7** (1), 45-50, **2014**.
19. Inun Naher, Atanu Kumar Das, **Subir Kumar Biswas** and Md. Nazrul Islam. Enhancement of life span of Mahogany (*Swietenia macrophylla*), Raintree (*Albizia saman*) and Akashmoni (*Acacia auriculiformis*) wood treating with CCB preservative, *Asian Journal of Applied Sciences*, **7** (1), 38-44, **2014**.
20. **Subir Kumar Biswas**, Atanu Kumar Das, Hiroyki Yano and Md. Iftekhar Shams. Development of high performance transparent nanocomposites reinforced with nanofibrillated chitin extracted from shrimp wastes, *Journal of Chitin and Chitosan Science*, **1** (2), 138-143, **2013**.

### Books:

1. Atanu Kumar Das, **Subir Kumar Biswas** and Dr. Mousa Nazhad. Pulp quality of *Musa sapientum* and *Eichhornia crassipes*, LAP Lambert Academic Publishing, Germany, ISBN: 978-3-659-45948-1, 2013.
2. Atanu Kumar Das, **Subir Kumar Biswas** and Dr. Mousa Nazhad. Pulp quality of mid-rib of coconut (*Cocos nucifera*) leaves, LAP Lambert Academic Publishing, Germany, ISBN: 978-3-659-16859-8, 2013.

### Awards, Honors and Scholarships

- 2020: International Academy of Wood Science (IAWS) PhD Dissertation Award (2<sup>nd</sup> place).
- 2019: Best poster award, The 4th Asia Research Node Symposium on Humanosphere Science, Nanjing, China.
- 2018: Student Poster Competition – 1st place in the International Convention of the Society of Wood Science and Technology (SWST), USA and the Japan Wood Research Society (JWRS), Nagoya, Japan.
- 2018: Travel grant award by the Society of Wood Science and Technology (SWST), USA to attend the International Convention of the Society of Wood Science and Technology (SWST), USA and the Japan Wood Research Society (JWRS), Nagoya, Japan.

- 2017: Best poster award, 4th International Cellulose Conference organized by the Cellulose Society of Japan, Fukuoka, Japan.
- 2017: Poster presentation selected for “ICC Next” (oral presentation) in the 4th International Cellulose Conference organized by the Cellulose Society of Japan, Fukuoka, Japan. “ICC Next” is defined as the next-generation leader in the cellulose science and technology.
- 2017: Oral presentation selected for Sci-Mix poster session in the 253rd ACS National Meeting and Exposition held in San Francisco, California, USA. Presentation in Sci-Mix is considered a distinction for the presenters as they represent the best 10% presentations (of both oral and posters) in a division.
- 2016: Monbukagakusho (MEXT) scholarship, awarded by the Ministry of Education, Culture, Sports, Science and Technology, Japan to pursue Ph.D. degree at Kyoto University in Japan.
- 2016: Best poster award, 7th Annual Meeting of the Nanofiber Society of Japan, Kyoto, Japan.
- 2016: Best poster award, 5th Japan Association for Chemical Innovation (JACI)/Green Sustainable Chemistry (GSC) Symposium, Kobe, Japan.
- 2014: Monbukagakusho (MEXT) scholarship, awarded by the Ministry of Education, Culture, Sports, Science and Technology, Japan to pursue Master’s degree at Kyoto University in Japan.
- 2014: Four-Year Doctoral Fellowship (4YF). The 4YF has been awarded to pursue Ph.D. degree at the Faculty of Forestry, The University of British Columbia (UBC), Canada. [Declined]
- 2014: Excellent Foreign Student (EFS) Scholarship. The EFS scholarship had been awarded by Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand to pursue Ph.D. degree. [Declined]
- 2013: The Abdolrahman Salaghi prize, awarded by Asian Institute of Technology, Thailand in recognition of the most outstanding academic performance in the Master’s degree program.
- 2013: The James A. Linen III Memorial prize, awarded by Asian Institute of Technology, Thailand in recognition of the most outstanding academic performance in the Master’s degree program.
- 2011: The Japan Government Scholarship, provided by the Asian Institute of Technology in Thailand to pursue Masters’ degree in Pulp and Paper Technology.
- 2010: Academic Distinction, awarded by Khulna University, Bangladesh for scoring CGPA 3.81 out of 4.00 in the Bachelor of Science (Honors) in Forestry program.
- 2002: 3rd Prize in the 25th National Science & Technology Week, awarded by Rajbari District Administration, Bangladesh (Project name: Transformer less power supply).

### Conference, Seminar and Symposium Presentations

1. [Invited lecture] JSPS science dialogue, Kyoto University of Advanced Science Senior High School, Kyoto, Japan, 2021.
2. [Poster] The 4th Asia Research Node Symposium on Humanosphere Science, Nanjing, China, 2019.
3. [Oral] International Conference on Nanotechnology for Renewable Materials (TAPPI Nano) organized by the Technical Association of the Pulp and Paper Industry (TAPPI), Chiba, Japan, 2019.
4. [Poster] 8th Symposium of the Japan Association for Chemical Innovation (JACI)/Green Sustainable Chemistry (GSC), Tokyo, Japan, 2019.
5. [Invited lecture/presentation] Research Institute for Sustainable Humanosphere (RISH), Kyoto University joint seminar with the University of Natural Resources and Life Sciences (BOKU), Austria at Kyoto University Uji Campus, Japan, 2019.

- [Poster] Joint Convention of the Society of Wood Science and Technology (SWST), USA and the Japan Wood Research Society (JWRS), Nagoya, Japan, 2018.
- [Invited lecture/presentation] Research Institute for Sustainable Humanosphere (RISH), Kyoto University joint seminar with the KTH Royal Institute of Technology, Sweden at Kyoto University Uji Campus, Japan, 2018.
- [Poster] 3rd Asia Research Node (ARN) Symposium organized by the Research Institute for Sustainable Humanosphere (RISH), Kyoto University and National Chung Hsing University, Taiwan, Taichung, Taiwan 2018.
- [Oral] 68th Annual meeting of the Japan Wood Research Society (JWRS), Kyoto, Japan, 2018.
- [Poster (two)] 25th Annual meeting of the Cellulose Society of Japan, Kyoto, Japan, 2018.
- [Poster] 337th Research Institute for Sustainable Humanosphere (RISH) Symposium/Nanocellulose Symposium organized by RISH, Kyoto University, Kyoto, Japan, 2017.
- [Oral + poster] The 4th International Cellulose Conference (ICC) organized by the Cellulose Society of Japan, Fukuoka, Japan, 2017.
- [Poster] 1st Asia Research Node (ARN) Symposium organized by the Research Institute for Sustainable Humanosphere (RISH), Kyoto University and Universiti Sains Malaysia, Penang, Malaysia, 2017.
- [Oral + poster] ACS 253rd National Meeting & Exposition organized by the American Chemical Society, San Francisco, California, USA, 2017.
- [Oral] 66th Annual meeting of the Japan Wood Research Society (JWRS), Nagoya, Japan, 2016.
- [Poster] 7th Annual meeting of the Nanofiber Society of Japan, Kyoto, Japan, 2016.
- [Poster] 5th Symposium of the Japan Association for Chemical Innovation (JACI)/Green Sustainable Chemistry (GSC), Kobe, Japan, 2016.
- [Oral] 23rd Annual meeting of the Cellulose Society of Japan, Tsukuba, Japan, 2016.
- [Poster] 22nd Annual meeting of the Cellulose Society of Japan, Hokkaido, Japan, 2015.

### Professional Society Memberships

- American Chemical Society, USA; Member (continuing)
- Technical Association of the Pulp and Paper Industry (TAPPI); Student member (Sep 2019–Aug 2020)
- Society of Wood Science and Technology (SWST), USA; Member (Dec 2018–Dec 2019)
- Japan Wood Research Society; Member (Apr 2018–Mar 2019)
- Japan Wood Research Society; Member (Apr 2016–Mar 2017)

### Referees

- Prof. Hiroyuki Yano**, Laboratory of Active Bio-Based Materials, Research Institute for Sustainable Humanosphere (RISH), Kyoto University, Gokasho, Uji, Kyoto 611-0011, Japan.  
Phone: +81774-38-3669; Email: yano@rish.kyoto-u.ac.jp
- Dr. Supachok Tanpichai**, Assistant Professor and Deputy Dean, Learning Institute, King Mongkut's University of Technology Thonburi, Bangkok 10140, Thailand.  
Phone: +662-470-8385; Email: supachok.tan@kmutt.ac.th
- Prof. Jingquan Han**, College of Material Science and Engineering, Nanjing Forestry University, Nanjing 210037, China. Email: hjq@njfu.edu.cn
- Prof. Mousa M. Nazhad**, Pulp and Paper Centre, University of British Columbia, Canada.  
Phone: +1 604 822 8752, Email: mousanazhad@mech.ubc.ca; mousanazhad@yahoo.com
- Prof. Md. Iftekhar Shams**, Forestry and Wood Technology Discipline, Khulna University, Khulna 9208, Bangladesh. Phone: +880-1714-353399; Email: shams@ku.ac.bd; shamsfwt75@gmail.com