Dr KARWEI SO
MChem, DPhil (Oxon)

Senior Scientist

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Karwei completed her DPhil in Materials Science at the University of Oxford. Prior to her DPhil, she obtained her Master's degree in Chemistry at the University of Durham. Karwei is based in our Hong Kong office and joined Brookes Bell as a Scientist in January 2019. She is fluent in speaking English and Cantonese and has a basic understanding of Japanese.

Karwei's MChem research used a solid-state synthesis to produce photocatalysts for water purification. These materials were characterised and tested using a range of techniques, including XRD, BET, UV-Vis spectroscopy and DRS.

Karwei's DPhil research topic was on optimising the production of carbon nanomaterials filled with magnetic metals and creating macrostructures from these nanomaterials. As part of her DPhil, she was the lead researcher in multidisciplinary collaborations with the Department of Engineering, University of Oxford, and the Bio-Nano Electronics Research Centre, Kawagoe, Japan. Throughout her DPhil, she developed strong skills in a range of analytical chemistry techniques, including SEM, TEM, EDX, SQUID, XPS, Raman spectroscopy, IR spectroscopy, XRD and contact angle measurements.

Karwei has attended onboard vessels and commodity facilities to investigate the extent and cause of cargo deterioration, cargo fires, and issues with minerals, such as liquefaction, contamination and quality matters. She has designed sampling protocols and overseen sampling of cargoes. Karwei has attended at laboratories to oversee sample analyses and interpreted the results for various commodities. She has also provided advice for the safe carriage of potentially dangerous goods.

Academic Qualifications

DPhil Oxon in Material Science, University of Oxford
Thesis: 'Making and Manipulating Nanowires Inside Carbon Nanotubes'

M.Chem (Hons) in Chemistry, University of Durham
Dissertation: 'Bismuth Metal Vanadates as Photocatalysts for Water Purification'

Membership of Professional Bodies

Member of the Royal Society of Chemistry, MRSC (2009)

Scientific and Consultancy Employment

Research Assistant (Summer Internship), University of Durham

Awards

- Awarded the Ironmongers' Prize 2016 at University of Oxford for best poster in the yearly departmental poster competition.
- Received a Japanese Society for the Promotion of Science (JSPS) Summer Fellowship 2015.
- Winner of the GlaxoSmithKline book award for outstanding performance in first year at the University of Durham.

Scientific and Consultancy Expertise

- Invited speaker at two conferences in Japan speaking on the topic of carbon nanomaterials with magnetic properties and their use.
- Executed mechanical testing using an innovative *in situ* SEM technique to observe material failure and plot stress-strain maps experienced by the sample during testing.
- Liaised with ship's salvors during cases to ensure that the cargo is handled correctly and promptly.

Selection of Cases Since Joining Brookes Bell

- Self-heating of Grains and Oilseeds
- Water Damage to Grains and Oilseeds
- Animal Feed Products (seedcake)
- Group A Cargoes (those liable to liquefy)
- Quality issues with Fertilisers
- Precious Mineral Fraud Investigations
- Advising on Potentially Dangerous Goods (Chemicals)
- Witnessing Laboratory Tests
- Sampling Various Commodities
- Cargo Fires
- Chemical Leaks from Containers
- Managing Gas Emissions from Coal
- Coal Quality Disputes
- Frozen Goods
- Containerised Goods
- Fuel and Liquid Chemicals
- Presenting in Seminars Related to Cargo