

NJELAMA SANGA, PhD
Polymer & Colloid Chemist

PROFILE

Chemist with a PhD in Polymer Chemistry (Uppsala University, 2025) and an MSc in Nuclear Physics & Technology (Ural Federal University, 2021), specialising in colloid and interface science, surfactant self-assembly, PFAS chemistry, and physicochemical characterisation of complex aqueous systems using small-angle scattering and neutron reflectometry. Experienced in undergraduate teaching, laboratory demonstration, and student supervision through a Staff Development Fellowship at the University of Zambia.

EDUCATION

PhD, Polymer Chemistry - Uppsala University, Sweden - 2021-2025

Thesis: Self-assembly of fluorocarbon surfactants and their interactions with a seed protein.

MSc, Nuclear Physics & Technology - Ural Federal University, Russia - 2019-2021

Thesis: Baromembrane method for concentrating radioactive substances in water samples using osmotic membranes.

BSc, Chemistry / Physics - University of Zambia, Zambia - 2013-2016

RESEARCH EXPERIENCE

PhD Researcher, Polymer & Colloid Chemistry - Uppsala University - Oct 2021-Oct 2025

- Designed and executed a 4-year experimental research programme on PFAS surfactant self-assembly and aggregation.
- Investigated counterion, concentration and temperature effects on micellar structure and interactions.
- Investigated fluorinated surfactant interactions with *Moringa oleifera* seed protein using neutron reflectometry.
- Planned and coordinated 8+ experimental campaigns at international neutron scattering facilities.
- Performed experimental troubleshooting and optimisation, reducing sample preparation time by approximately 40%.
- Interpreted complex datasets into scientific conclusions, reports, publications and presentations.

Intern, Water Treatment & Production - Zambia Breweries - Feb 2012-May 2012

- Supported water treatment and production operations, quality checks, process monitoring and laboratory testing.

PUBLICATIONS

1. Sanga, N.; Ahrens, L.; Rennie, A.R.R. Counterion Influence on Perfluorooctanoate Micelles Characteristics: Shape, Size and Interactions (2025).
2. Sanga, N.; Ahrens, L.; Smith, G. N.; Rennie, A.R.R. Influence of Magnesium on the Structure and Hydration of Perfluorooctanoate Micelles - Comparison with Sodium Salt (Submitted).

3. Sanga, N.; Croy, N.; Ahrens, L.; Welbourn, R.J.L.; Rennie, A.R.R. Interaction of Perfluorooctanoate and Perfluorohexanoate with *Moringa oleifera* Seed Protein (2025).

CONFERENCES & PRESENTATIONS

Swedish Neutron Week - annual presentations (2022-2025)

ESRF Users' Meeting - Grenoble, France (2024)

International Conference on Neutron Scattering (ICNS) - Copenhagen, Denmark (2025)

European Summer School on Science Communication - Germany (2019)

SKILLS

Analytical & Characterisation: SANS, SAXS, neutron reflectometry, conductimetry, SasView quantitative modelling, data analysis.

Laboratory: Experimental design and optimisation, filtration, solvent extraction, dialysis, freeze-drying, wet-lab safety protocols.

Teaching & Supervision: Undergraduate laboratory instruction, tutorial delivery, assessment design, student project supervision.

Communication: Technical reporting, scientific writing, conference presentation, cross-institutional collaboration.

Languages: English (fluent), Russian (basic), Swedish (basic).

TEACHING EXPERIENCE

Staff Development Fellow, Department of Chemistry - University of Zambia - Jul 2017-Present

- Delivered laboratory demonstrations and tutorials in Physical Chemistry and first-year general chemistry to undergraduate cohorts of 120+ students.
- Designed and implemented two new practical chemistry modules, including experimental procedures and safety documentation.
- Assessed assignments, tests and examinations and supported students in scientific problem-solving and technical report writing.