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# Combating “fishy” seafood using nuclear techniques

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Food provenance is a global concern due to rising instances of food fraud, costing the global food industry over 50 billion USD per annum and leading to consumers getting lower quality produce. Seafood is a high value food product, and the Australian seafood industry is worth 4 billion AUD by 2023. Most Australian seafood is exported, and complex supply chains can leave it susceptible to seafood fraud. Accurate and reliable methods of determining seafood provenance is necessary to deter fraud in the supply chain. While conventional techniques can be used for determining seafood provenance, there is no single method that accurately determines both the geographic and production origin of seafood.

This is where nuclear techniques can play a vital role, the ANSTO led seafood provenance consortium has partnered with university, industry, and government agencies to develop a method for determining seafood provenance using iso-elemental fingerprinting. This work also highlights the utilisation of ANSTO’s multi-platform analysis capabilities including x-ray fluorescence through Itrax, accelerator-based ion beam analysis and stable isotope analysis that allow provenance to be determined with >80% accuracy when combined with machine learning based models.

This research is expected to provide the industry and regulatory bodies with an effective way of determining seafood provenance. Furthermore, the iso-elements fingerprints are unique to each grower and has the potential to be used as a tool to protect their brands. It also ensures that the Australian export industry is protected and allow consumers to make informed decisions when purchasing seafood.

## Level of Expertise

Student

## Presenter Gender

Man

## Pronouns

He/Him

## Which facility did you use for your research

Centre for Accelerator Science

## Students Only - Are you interested in AINSE student funding

Yes

## Do you wish to take part in the Student Poster Slam

No

## **Condition of submission**

Yes

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