Contribution ID: **58** Type: **Poster**

STRUCTURAL EFFECTS OF THERMAL PROCESSING ON RED SEAWEEDS FOR THE PRODUCTION OF BIO-BASED FOOD PACKAGING MATERIALS

Thursday, 8 September 2022 19:35 (20 minutes)

This study evaluates the use of whole seaweed biomass to obtain bio-based films for food packaging applications in a more sustainable and energy efficient way. To this end, four different species of agarophytes (Gelidium sesquipedale, Gracilaria chilensis, Gracilaria tenuistipitata and Gracilaria verrucosa) were minimally processed by melt blending combined with compression moulding, investigating the effect of the composition and cell wall structure of the different species on the final performance of the films. The seaweed biomass was mainly composed of carbohydrates (35-50%), but significant amounts of proteins, ashes and lipids were also detected. Temperature-resolved SAXS experiments evidenced the distinct behaviour of the different seaweeds upon thermal processing, with those species with higher cellulose content (G. sesquipedale and G. verrucosa) presenting a greater interfibrillar packing density and thermal resistance. The higher cellulose content of G. sesquipedale resulted in stronger films with high water vapour barrier capacity, while the higher agar content of G. chilensis improved its elongation capacity. The results from this work evidence the potential of red seaweed biomass to generate food packaging materials in a cost-effective and environmentally friendly way and show the great utility of SAXS to investigate the effect of cell wall nanostructure on the processability and properties of the obtained materials.

Would you like to participate in the Poster Prize competition?

Yes

Primary authors: Dr LÓPEZ RUBIO, Amparo (Food Safety and Preservation Department); Dr MARTÍNEZ ABAD, Antonio (Food Safety and Preservation Department, IATA-CSIC); CEBRIAN LLORET, Vera (IATA-CSIC); Dr MARTÍNEZ SANZ, Marta (Instituto de Investigación en Ciencias de la Alimentación (CSIC-UAM)); MARTÍNEZ GUIL, Juan Carlos (ALBA Synchrotron)

Presenter: MARTÍNEZ GUIL, Juan Carlos (ALBA Synchrotron)

Session Classification: List of posters presented during the conference