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Type: **Talk (20 min + 5 min discussion)**

## **Architectural dynamics of photosynthetic thylakoid membranes during simulated coral bleaching**

*Thursday, 8 December 2022 15:00 (25 minutes)*

Corals bleach under a number of stresses, one of these being thermal stresses exemplified by the 2010, 2016 and 2017 bleaching events in Australia's Great Barrier Reef. Such events demand detailed physiological understanding in order to provide predictive knowledge of the effects of rising ocean temperatures on coral. One technique suitable for in situ examination of the effect of thermal stresses on corals, and in particular of the intra-cellular membranes associated with the photosynthetic apparatus of the symbiotic algae, known as zooxanthellae or Symbiodinium living in hospice in coral cells is small angle neutron scattering (SANS). (Jakubauskas et al., 2019) When applied to photosynthetic organisms such as cyanobacteria the method can provide a statistical and non-destructive perspective on the organisation of photosynthetic membranes. Here we report the temperature induced changes of photosynthetic membranes in Symbiodinium living within individual *Aiptasia* anemone specimens extracted from SANS data using a model of the structure. The results provide a simple perspective on the effects of temperature on the photosynthetic machinery of the symbiote.

Jakubauskas, D., Ł. Kowalewska, A. V. Sokolova, C. J. Garvey, K. Mortensen, P. E. Jensen, and J. J. K. Kirkensgaard. 2019. Ultrastructural modeling of small angle scattering from photosynthetic membranes. *Scientific Reports* 9(1):19405.

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