

SYNCHROTRON MICRO-XRF ELEMENTAL ANALYSIS OF THE MUSSEL SHELL *PERNA VIRIDIS* FROM MANILA BAY, PHILIPPINES

Vallerie Ann Innis-Samson¹, Mari Mizusawa^{1,2} and Kenji Sakurai¹

¹National Institute for Materials Science, Sengen, Tsukuba, Ibaraki 305-0047 Japan

²Comprehensive Research Organization for Science and Society, Tokai, Ibaraki 319-1106 Japan

This work describes the micro-XRF elemental analysis of the outermost layer of the bivalve mussel *Perna viridis* harvested in the Manila Bay area, Philippines. Synchrotron measurements were performed at BL-4A at the KEK-Photon Factory, Tsukuba Japan. Poly-capillary optics was used to perform line scan and area mapping of the shell sample with beam size 25-30 μm for excitation energies less than 10 keV and the sample placed in open air condition. This allows us to probe elemental distribution of the major element Ca and minor elements Fe, Mn and Cu along the growth axis as well as certain areas of the shell samples. To observe other major elements like Zn, Br and Sr, excitation energy of 20 keV was used but without polycapillary optics with beam size at 100 μm and the sample placed in vacuum. Correlation between the major and minor elements will be discussed and how they are related to the growth process and the environment of the shell. Quantitative analysis on minor elements will also be discussed. Manila Bay, Philippines is a semi-enclosed body of water (an estuarine environment) located on the western part of Luzon. It supports significant fisheries and aquaculture activities and serves as a sink and transit area for the discharge of domestic and industrial wastes from Metro Manila and the surrounding provinces¹.

References:

[1] Velasquez, I.B., Jacinto, G.S., 1995. Wet and dry season nutrient regimes in Manila Bay. In: Watson, D., Ong, K.S., Vigers, G. (Eds.), ASEAN Criteria and Monitoring: Advances in Marine Environmental Management and Human Health Protection, Proceedings of the ASEAN-Canada Midterm Technical Review Conference on Marine Science, 24–28 October, 1994, Singapore. pp. 278–284.