

SEMINAR NOTICE

*Department of Physics and Engineering Physics
University of Saskatchewan*

SPEAKER: Lisa Van Loon, Adjunct Research Professor
Departments of Earth Science and Anthropology,
Western University

TOPIC: *Illuminating Hidden Histories*

DATE: Tuesday February 24th, 2026

TIME: 3:30-4:30 p.m.

What do Arctic salmon fossils, a polluted coastal inlet, and Byzantine gold coins have in common? All reveal their secrets under synchrotron light.

This talk explores how modern synchrotron X ray imaging, spectroscopy, and diffraction make it possible to study rare, fragile, and complex materials without destroying them. Through three very different case studies, we show how the same physics-based tools can illuminate questions that span natural history, environmental change, and human economies.

In Alaska, high resolution synchrotron micro-CT allows fossil fish bones no larger than grains of sand to be reconstructed in three dimensions while still embedded in rock. These digital fossils reveal the oldest known salmon relative and point to the Arctic as an unexpected cradle for modern freshwater fish.

On the coast of British Columbia, full spectrum synchrotron X ray fluorescence mapping of intertidal rockweed records how metals from historic mine drainage move through living tissues. These elemental maps provide a powerful window into ecosystem damage and recovery at legacy mine sites.

Finally, synchrotron spectroscopy applied to Byzantine gold coins detects trace platinum hidden within the gold matrix and images internal structure without sampling. The results suggest access to gold sources and refining practices that helped sustain one of history's longest lived economies

