

The Use of the Synchrotron Light Sourced Infrared Microspectroscopy for Feed Science and Animal Nutrition Research

ABSTRACT

Traditional “wet” chemical analysis methods cannot detect intrinsic structural chemistry of a feed/seed/plant tissues because the inherent structures are destructed during the processing for analysis. Synchrotron-based FTIR microspectroscopy, taking advantages of synchrotron light brightness, can explore molecular chemical-makeup and features of the microstructure of biological samples. This article shows that with synchrotron-based FTIR microspectroscopy, the molecular chemistry of various feed/seed/plant tissues could be imaged at a cellular and subcellular level. Our studies demonstrate that the non-invasive IR microspectroscopic analysis with extremely bright synchrotron source is able to provide us useful information for understanding the chemical characteristics of feed microstructure in relation to feed/seed quality and nutritive value.

Keywords: Synchrotron; FTIR microspectroscopy; Feed/Food/Plant Micro Structure; Molecular Chemistry; Imaging; Feed Quality and Nutritive Value; Animals

EDUCATION

- Ph.D. University of Melbourne, Australia, 1999
- M.Sc. Wageningen University, The Netherlands, 1995

SHORT CV:

- SAF Research Chair and Professor in College of Agriculture, University of Saskatchewan
- Research interests: Synchrotron Applications, Feed Science Technology, Feed Research and Development, Feed Processing/Treatment, Feed Chemistry, Feed Structural Biology, Nutrient Modeling, Feeding Systems and Ruminant Nutrition.

Contact details

Peiqiang Yu, Ph.D.
SAFRR Research Chair and Professor
College of Agriculture, University of Saskatchewan
6D10 Ag. Bld., 51 Campus Drive, Saskatoon, SK, S7N 5A8, Canada
Tel: +1 306 966 4132
Fax: +1 306 966 4151
E-mail: yupe@sask.usask.ca