

o.m11.o5 **X-Ray Diffraction Analysis: From High School Through Graduate School: A Powerful Tool for Understanding Molecular Structure and Bonding.** A.D. Hunter. S.J. DiMuzio, *Youngstown State University, Department of Chemistry, 1 University Plaza, Youngstown, Ohio, USA 44555-3663, 330-742-7176, adhunter@cc.yzu.edu.*

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Recent advances in crystallographic theory, hardware, and software along with the widespread availability of powerful personal computers has enabled the rapid growth in the "hands on" use of diffraction methods in fields as diverse as Materials Science, Geology, Condensed Matter Physics, Chemistry, Biochemistry, and Molecular Biology. For this reason, it is essential that all science and technology majors get improved grounding in diffraction methods.

Most current efforts in this area, including those at Youngstown State University, have focused on units or dedicated courses for senior or graduate level majors. However, such offerings will necessarily miss most science and technology students. We are developing a package of diffraction methods curricular materials, including: a lab text and associated WEB materials, student and instructor handouts, tested lesson plans, an annotated data base of diffraction data sets, and a "student version" of a commercial diffraction analysis package. At the junior/senior/graduate level these materials will be suitable for use in lab courses aimed at science majors with an emphasis on applied diffraction analysis. At the introductory College and High School levels, these lecture and "hands on" wet and computer lab materials will emphasize the relationship between experimental structural data and molecular bonding theories.

The results of our efforts in these areas will be presented as will plans for site testing the developed materials at High Schools, Colleges, and Universities (volunteer test sites are solicited). [Note: This work is being funded by Youngstown State University grants and NSF DUE CCLI-EMD grant # 9980921 to ADH.]