18.X-04 LANGUAGE PREPROCESSORS AND PORTABILITY. By Robert J. Munn and James H. Stewart, Department of Chemistry, University of Maryland, College Park, MD.

The scientist interested in developing large scale, extensively used and long-term programs is faced with a number of conflicting optimizing factors. Two developments in computer science - structured programming and macro processing - have recently emerged as programming tools that allow the scientific programmer to both have his or her favorite cake and eat it. The advantages in using a structured programming language based on FORTRAN will be discussed. These advantages include familiarity, efficiency and portability. The additional advantages that accrue when a macro processor is also available will be emphasized. Included in those advantages are machine dependent efficiency, extensibility, operating system interfaces, and input-output definition. The disadvantages of these approaches will also be discussed.

Finally, the relationship of structured FORTRAN to both FORTRAN 77 and other languages such as PASCAL and ADA will be explored.