

**Laboratory Experiences: Descriptive Chemistry and Computing**  
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**Abstract**

Laboratory instruction in chemistry is intended to help the student acquire the art of translating observation and thought into action. The development of observational skills requires that a student be able to see, repeatedly, phenomena such as chemical reactions in different contexts. Until recently, the available hardware was not appropriate for the development of computer-aided courseware that would facilitate the acquisition of observational skills associated with reaction or descriptive chemistry.

CHEMLAB: REACTIONS utilizes advanced in hardware and software to create an effective simulation of the classic N-solution experiment. Using an IBM PS/2 Model 80 for development and an IBM PS/2 Model 55SX in the classroom, CHEMLAB: REACTIONS has been written in Openscript, the programming language of ToolBook.

Video images of chemical reaction have been captured using the AVC card, a still video camera system and various video sources. The general driver is a loop of actions in which the student must make a decision, the results of the decision(s) is shown and the loop begins again. The basic loop is run until the student chooses to terminate the session. Theoretically, any scheme of qualitative analysis can utilize this basic loop with the corresponding video images.

CHEMLAB: REACTIONS, in effect, compresses lab time for students, permits the study of "dangerous reactions" or reactions involving expensive chemicals, and never required chemicals to be handled or consumed, while the student requires manipulative, observational and decision making skills.