

## ***Why Starting at Ground Zero?***

Occasionally I am asked why I wrote the book, *Starting at Ground Zero*, and why I named it that. There are a number of reasons why I wrote it. First of all, there aren't any other books on the market devoted to methods of teaching chemistry. The teachers' manuals of most existing chemistry textbooks contain excellent theoretical background material, but they seldom give even basic examples of how to introduce, develop, or reinforce those abstract concepts so that beginning students can understand them at their cognitive-processing levels. Secondly, first-year chemistry teachers constantly make critical decisions when trying to simplify concepts without giving students "simplistic" ideas that may have to be unlearned later. The contents of *Starting at Ground Zero* offers guidance in making and implementing those decisions. Finally, it became apparent to me while doing workshops for high school chemistry teachers that the materials they found most important were the "how to do it's" that successful teachers shared with them and that those effective methods were too good not to be in print so other teachers could use them.

The title *Starting at Ground Zero* expresses how I feel every time I face a class of chemistry students for the first time. I have to remind myself of how I felt when *I didn't know any chemistry*. Even when we think we are starting at the beginning, we unconsciously make assumptions about our novice students' ability to read and understand a chemistry test, to perceive the implications of the symbolism of scientific communication, and to see the key relationships that will make them adept problem-solvers.

The challenge of working with first-year students carries with it a great responsibility. One really *cannot teach* chemistry, you can *only help them learn* it. Learning chemistry requires a unique approach and a different mind-set from learning most other subjects. Since there are so few absolutes in chemistry, concrete learners feel they have nothing to which they can anchor themselves.

The intent of *Starting at Ground Zero* is to help teachers of first-year chemistry students become more proficient in helping students "learn how to learn" chemistry, at using a variety of approaches to introduce and present new chemical concepts, and at evaluating the learning that has taken place.

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