

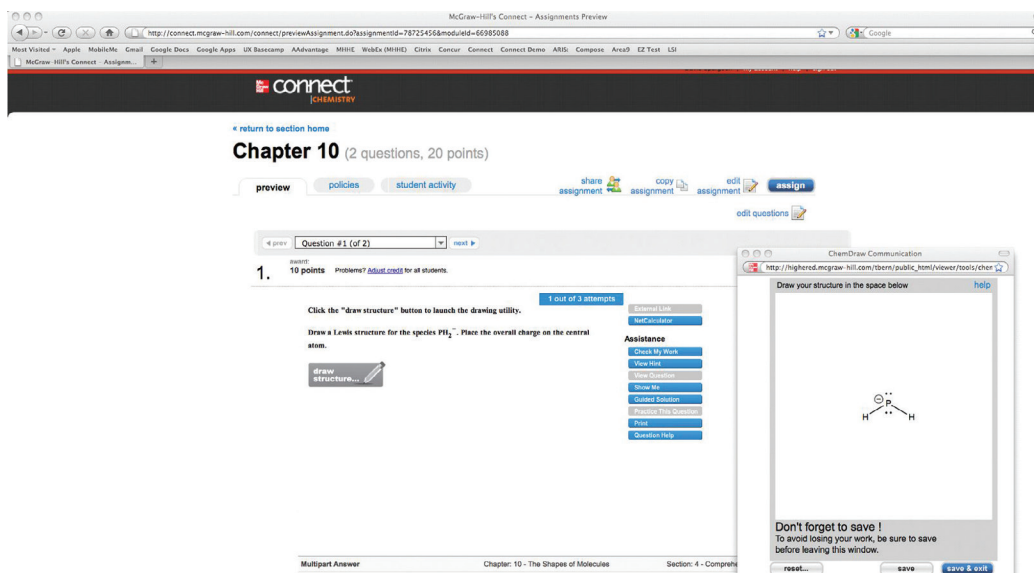
Instructor and Student Resources

McGraw-Hill Connect® Chemistry

Connect Chemistry www.mcgrawhillconnect.com/chemistry McGraw-Hill Connect® Chemistry is a web-based, interactive assignment and assessment platform that incorporates cognitive science to customize the learning process. Through careful observation of real students and active instructors we have been able to evolve the online homework tool to an online learning and engagement tool. The goal of Connect is to usher in a new era of meaningful online learning that balances the conceptual and calculated aspect of this most vital discipline.

McGraw-Hill offers students and instructors an enhanced digital homework experience using **Connect Chemistry**. Each problem within Connect Chemistry carries the text problem-solving methodology and is tailored with specific hints, as well as answer-specific feedback for common incorrect answers—all written by the author, Jason Overby. Several rounds of editorial and chemical accuracy checking, in addition to numerous instructor and student tests of all problems, ensure the accuracy of all content.

In addition to the specific hints and feedback provided for all questions, many questions allow students a chemical drawing experience that can be assessed directly inside of their homework. Connect Chemistry utilizes PerkinElmer's ChemDraw, which is widely considered the “gold standard” of scientific drawing programs and the cornerstone application for scientists who draw and annotate molecules, reactions, and pathways. This collaboration of Connect and ChemDraw features an easy-to-use, intuitive, and comprehensive course-management and homework system with professional-grade drawing capabilities.



The screenshot displays the McGraw-Hill Connect Chemistry interface. At the top, it shows the 'connect CHEMISTRY' logo and navigation options like 'return to section home'. The main content area is titled 'Chapter 10 (2 questions, 20 points)' and includes sub-sections for 'preview', 'policies', and 'student activity'. A specific question is shown: 'Question #1 (of 2)' with a value of '10 points'. The question text reads: 'Draw a Lewis structure for the species PH_2^+ . Place the overall charge on the central atom.' Below the text is a 'draw structure' button. To the right, there is an 'Assistance' menu with buttons for 'Check My Work', 'Show Me', 'Control Solution', 'Print', and 'Question Help'. A ChemDraw window is open, showing a drawing area with a central phosphorus atom bonded to two hydrogen atoms, and a positive charge (+) above the phosphorus. A warning message at the bottom of the ChemDraw window says: 'Don't forget to save! To avoid losing your work, be sure to save before leaving this window.'

Problems from this textbook are served up in Connect for instructors to build assignments that are automatically graded and tracked through reports that export easily to Excel. Within Connect, instructors can also create and share materials with colleagues. Ask your McGraw-Hill representative for more information, and then check it out at www.mcgraw-hillconnect.com/chemistry.

McGraw-Hill ConnectPlus®

If you or your students are ready for an alternative version of the traditional textbook, McGraw-Hill has your solution. eBooks from McGraw-Hill are smart, interactive, searchable, and portable. Included is a powerful suite of built-in tools that allow detailed searching, highlighting, note taking, and student-to-student or instructor-to-student note sharing. In addition, the media-rich eBook for *Chemistry: Atoms First* integrates relevant animations and videos into the textbook content for a true multimedia learning experience.

Animations and Media Player/MPEG Content

A number of animations are available for download to your MP3 player/iPod through the textbook's Connect site. Also, audio summaries of each chapter will be available for MP3 player/iPod download.

McGraw-Hill LearnSmart®

McGraw-Hill LearnSmart is available as a standalone product or as an integrated feature of McGraw-Hill Connect® Chemistry. It is an adaptive learning system designed to help students learn faster, study more efficiently, and retain more knowledge for greater success. LearnSmart assesses a student's knowledge of course content through a series of adaptive questions. It pinpoints concepts the student does not understand and maps out a personalized study plan for success. This innovative study tool also has features that allow instructors to see exactly what students have accomplished and a built-in assessment tool for graded assignments. Visit the following site for a demonstration. www.mhlearnsmart.com

The image displays two screenshots of the McGraw-Hill LearnSmart interface. The left screenshot shows a question: "Which of the following structures have a plane of symmetry? (Select all that apply.)" with four chemical structures labeled Structure A, B, C, and D. Below the question are four radio buttons for "Structure C", "Structure D", "Structure B", and "Structure A". A "Do you know the answer? (Be honest.)" section has four buttons: "Yes", "Probably", "Maybe", and "No—just guessing". A "Standings for all" table is visible in the top right corner of the screenshot.

The right screenshot shows a text-based question: "A molecule that cannot be superimposed on its mirror image is referred to by the general term _____, whereas a carbon atom bonded to four different atoms or groups is a _____ center." Below the question are two buttons: "Submit answer" and "Give up". A "Standings for all" table is visible in the top right corner of the screenshot.

McGraw-Hill SmartBook™

Powered by the intelligent and adaptive LearnSmart engine, SmartBook is the first and only continuously adaptive reading experience available today. Distinguishing what students know from what they don't, and honing in on concepts they are most likely to forget, SmartBook personalizes content for each student. Reading is no longer a passive and linear experience but an engaging and dynamic one, where students are more likely to master and retain important concepts, coming to class better prepared.

SmartBook includes powerful reports that identify specific topics and learning objectives students need to study. These valuable reports also provide instructors insight into how students are progressing through textbook content and are useful for identifying class trends, focusing precious class time, providing personalized feedback to students; and tailoring assessment.

How does SmartBook work?

Each SmartBook contains four components: Preview, Read, Practice and Recharge. Starting with an initial preview of each chapter and key learning objectives, students read the material and are guided to topics over which they need the most practice based on their responses to a continuously adapting diagnostic. Read and Practice continue until SmartBook directs students to recharge important material they are most likely to forget to ensure concept mastery and retention.

McGraw-Hill LearnSmart Prep™

Fueled by LearnSmart—the most widely used and intelligent adaptive learning resource — LearnSmart Prep is designed to get students ready for a forthcoming course by quickly and effectively addressing prerequisite knowledge gaps that may cause problems down the road.

By distinguishing what a student knows from what they don't, and honing in on concepts they are most likely to forget, LearnSmart Prep maintains a continuously adapting learning path individualized for each student, and tailors content to focus on what the student needs to master in order to have a successful start in the new class.

This revolutionary technology is available only from McGraw-Hill Education and for hundreds of course areas, including general and organic chemistry, as part of the LearnSmart Advantage series.

McGraw-Hill LearnSmart Labs™ for General Chemistry

THE Virtual Lab Experience.

Based on the same world-class super-adaptive technology as LearnSmart, McGraw-Hill LearnSmart Labs is a must-see, outcomes-based lab simulation. It assesses a student's knowledge and adaptively corrects deficiencies, allowing the student to learn faster and retain more knowledge with greater success.

First, a student's knowledge is adaptively leveled on core learning outcomes: Questioning reveals knowledge deficiencies that are corrected by the delivery of content that is conditional on a student's response. Then, a simulated lab experience requires the student to think and act like a scientist: Recording, interpreting, and analyzing data using simulated equipment found in labs and clinics. The student is allowed to make mistakes—a powerful part of the learning experience! A virtual coach provides subtle hints when needed; asks questions about the student's choices; and allows the student to reflect upon and correct those mistakes. Whether your need is to overcome the logistical challenges of a traditional lab, provide better lab prep, improve student performance, or make your online experience one that rivals the real world, LearnSmart Labs accomplishes it all. Learn more at www.mhlearnsmart.com

McGraw-Hill Higher Education and Blackboard® Have Teamed Up

Blackboard®, the Web-based course management system, has partnered with McGraw-Hill to better allow students and faculty to use online materials and activities to complement face-to-face teaching. Blackboard features exciting social learning and teaching tools that foster more logical, visually impactful, and active learning opportunities for students. You'll transform your closed-door classrooms into communities where students remain connected to their educational experience 24 hours a day.

This partnership allows you and your students access to McGraw-Hill's Connect and McGraw-Hill Create™ right from within your Blackboard course—all with one single sign-on. Not only do you get single sign-on with Connect and Create, you also get deep integration of McGraw-Hill content and content engines right in Blackboard. Whether you're choosing a book for your course or building Connect assignments, all the tools you need are right where you want them—inside of Blackboard.

Grade books are now seamless. When a student completes an integrated Connect assignment, the grade for that assignment automatically (and instantly) feeds your Blackboard grade center.

McGraw-Hill and Blackboard can now offer you easy access to industry-leading technology and content, whether your campus hosts it or we do. Be sure to ask your local McGraw-Hill representative for details.

McGraw-Hill Create™

With **McGraw-Hill Create**, you can easily rearrange chapters, combine material from other content sources, and quickly upload content you have written, like your course syllabus or teaching



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My Lectures—Tegrity®

McGraw-Hill Tegrity records and distributes your class lecture with just a click of a button. Students can view anytime/anywhere via computer, iPod, or mobile device. It indexes as it records your PowerPoint® presentations and anything shown on your computer so students can use keywords to find exactly what they want to study. Tegrity is available as an integrated feature of McGraw-Hill Connect Chemistry and as a standalone.

Presentation Tools

Presentation Tools are a complete set of electronic book images and assets for instructors. You can build instructional materials wherever, whenever, and however you want! Accessed from your textbook's Connect website, the Presentation Tools are an online digital library containing photos, artwork, animations, and other media types that can be used to create customized lectures, visually enhanced tests and quizzes, compelling course websites, or attractive printed support materials. All assets are copyrighted by McGraw-Hill Higher Education, but can be used by instructors for classroom purposes. The visual resources in this collection include:

- **Art** Full-color digital files of all illustrations in the book.
- **Photos** The photos collection contains digital files of photographs from the text.
- **Tables** Every table that appears in the text is available electronically.
- **Animations** Numerous full-color animations illustrating important processes are also provided.
- **PowerPoint® Lecture Outlines** (authored by M. Stacey Thomson of Pasco-Hernando Community College) Ready-made presentations for each chapter of the text.
- **PowerPoint Slides** All illustrations, photos, and tables are pre-inserted by chapter into blank PowerPoint slides.

Computerized Test Bank Online

A comprehensive bank of test questions (by Kathy Thrush Shaginaw of Particular Solutions, Inc.) is provided within a computerized test bank, enabling professors to prepare and access tests or quizzes anywhere, at any time. Instructors can create or edit questions, or drag-and-drop questions to prepare tests quickly and easily. Tests may be published to their online course or printed for paper-based assignments.

Instructor's Manual and Solutions Manual

The instructor's manual, written by David Boatright of the University of West Georgia, provides tips on teaching atoms first, literature citations, integration of media, and end-of-chapter problem difficulty levels and categories.

The instructor solutions manual provides answers to the Practice Problem C, Visualizing Chemistry, and Key Skills questions and solutions to all Review Questions and Problems from the text. The instructor's manual and solutions manual can be found in the Instructor Resources on Connect.

Workbook and Student Solutions Manual

The Workbook includes the student solutions manual for a one-stop shop for student use. The Workbook was written by Dawn Richardson and Amina El-Ashmawy from Collin College. The Workbook offers students the opportunity to practice the basic skills and test their understanding of the content knowledge within the chapter. Types of problems and how to solve them are presented along with any key notes on the concepts to facilitate understanding. Key Concepts, Study Questions, Practice Questions, and a Practice Quiz are provided within each chapter.

The student will find answers to the Visualizing Chemistry and Key Skills questions and detailed solutions and explanations for the odd-numbered problems from the text in the solutions manual.

Laboratory Manual

Laboratory Manual to Accompany Chemistry: Atoms First by Gregg Dieckmann and John Sibert from the University of Texas at Dallas. This laboratory manual presents a lab curriculum that is organized around an atoms-first approach to general chemistry. The philosophy behind this manual is to (1) provide engaging experiments that tap into student curiosity, (2) emphasize topics that students find challenging in the general chemistry lecture course, and (3) create a laboratory environment that encourages students to “solve puzzles” or “play” with course content and not just “follow recipes.” The laboratory manual represents a terrific opportunity to get students turned on to science while creating an environment that connects the relevance of the experiments to a greater understanding of their world. This manual has been written to provide instructors with tools that engage students, while providing important connections to the material covered in an atoms-first lecture course.

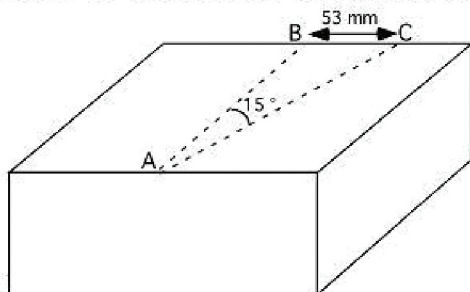
PROCEDURE

I. Construct Spectroscope

1. fold 8 in × 8 in × 3.5 in (203 mm × 203 mm × 89 mm) box
2. use a strip of black tape on the inside of the box to secure the bottom fold and prevent light from leaking through
3. on the bottom face of the box, use your ruler to draw a line that splits the box bottom in half, this is the long leg of a right triangle (connects points A and B in diagram below)
4. to generate the correct angle (15 °) between the slit and the diffraction grating, the short leg of the triangle (line B-C in diagram below) will measure 53 mm long. NOTE: the length of leg B-C will be different if you use a box that has a length (leg A-B) different than 8 inches; to calculate, use the equation

$$\tan(\theta) = \frac{(B-C)}{(A-B)}$$

where θ = angle C-A-B = 15 °, and A-B and B-C are the lengths of the two legs of the triangle.



Important features of this laboratory manual:

- Early experiments focus on topics introduced early in an atoms-first course—properties of light and the use of light to study nanomaterials, line spectra and the structure of atoms, periodic trends, etc.
- Prelab or *foundation* exercises encourage students to understand the important concepts/calculations/procedures in the experiment through working together.
- Postlab or *reflection* exercises put the lab content in the context of a larger chemistry/science picture.
- Instructor’s resources (found in the Instructor Resources on the online learning center from Connect®) provided with each experiment outline variations that can be incorporated to enrich the student experience or tailor the lab to the resources/equipment available at the institution.

Enhanced Support for Faculty and Students

McGraw-Hill offers various tools and technology products in support of *Chemistry: Atoms First* to both faculty and students alike. Instructors can obtain teaching aides by calling the McGraw-Hill Customer Service Department at 1-800-338-3987, visiting our online catalog at www.mhhe.com, or by contacting their local McGraw-Hill sales representative. Students can order supplemental study materials by contacting their campus bookstore, calling 1-800-262-4729, or online at www.shopmcgraw-hill.com.