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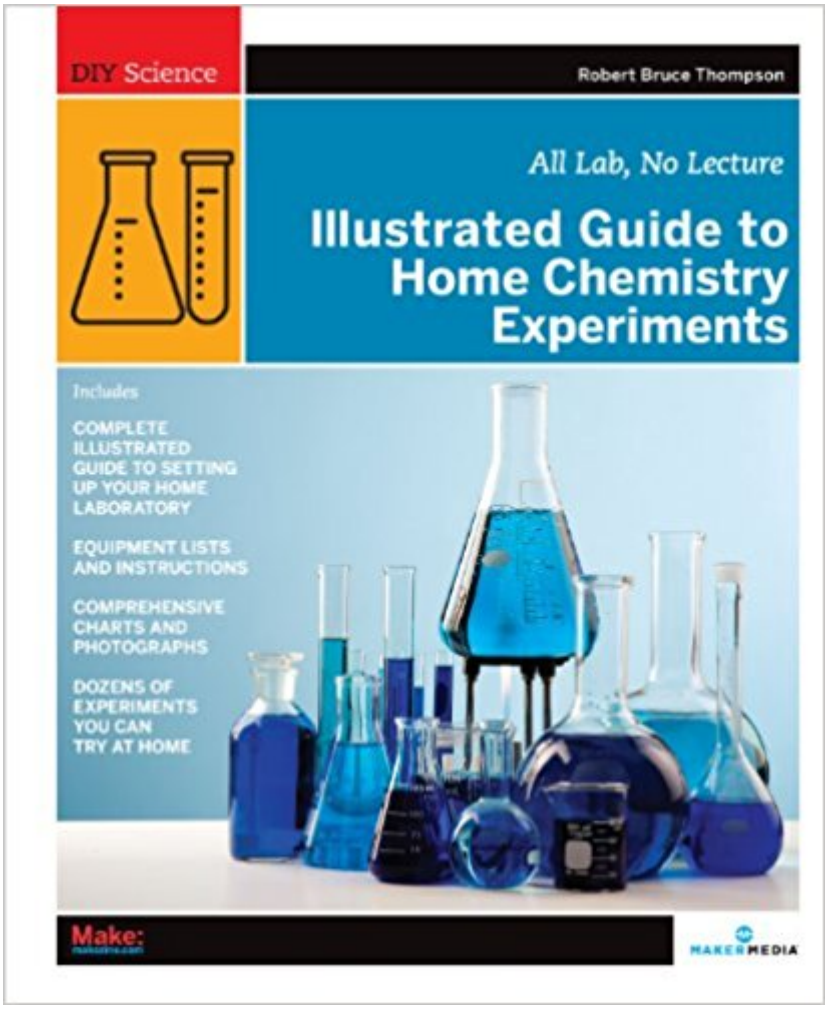
Illustrated Guide To Home Chemistry Experiments: All Lab, No Lecture (DIY Science)



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Synopsis

For students, DIY hobbyists, and science buffs, who can no longer get real chemistry sets, this one-of-a-kind guide explains how to set up and use a home chemistry lab, with step-by-step instructions for conducting experiments in basic chemistry -- not just to make pretty colors and stinky smells, but to learn how to do real lab work:Purify alcohol by distillationProduce hydrogen and oxygen gas by electrolysisSmelt metallic copper from copper ore you make yourselfAnalyze the makeup of seawater, bone, and other common substancesSynthesize oil of wintergreen from aspirin and rayon fiber from paperPerform forensics tests for fingerprints, blood, drugs, and poisonsand much moreFrom the 1930s through the 1970s, chemistry sets were among the most popular Christmas gifts, selling in the millions. But two decades ago, real chemistry sets began to disappear as manufacturers and retailers became concerned about liability. ,em>The Illustrated Guide to Home Chemistry Experiments steps up to the plate with lessons on how to equip your home chemistry lab, master laboratory skills, and work safely in your lab. The bulk of this book consists of 17 hands-on chapters that include multiple laboratory sessions on the following topics:Separating MixturesSolubility and SolutionsColligative Properties of SolutionsIntroduction to Chemical Reactions & StoichiometryReduction-Oxidation (Redox) ReactionsAcid-Base ChemistryChemical KineticsChemical Equilibrium and Le Chatelier's PrincipleGas ChemistryThermochemistry and CalorimetryElectrochemistryPhotochemistryColloids and SuspensionsQualitative AnalysisQuantitative AnalysisSynthesis of Useful CompoundsForensic ChemistryWith plenty of full-color illustrations and photos, Illustrated Guide to Home Chemistry Experiments offers introductory level sessions suitable for a middle school or first-year high school chemistry laboratory course, and more advanced sessions suitable for students who intend to take the College Board Advanced Placement (AP) Chemistry exam. A student who completes all of the laboratories in this book will have done the equivalent of two full years of high school chemistry lab work or a first-year college general chemistry laboratory course.This hands-on introduction to real chemistry -- using real equipment, real chemicals, and real quantitative experiments -- is ideal for the many thousands of young people and adults who want to experience the magic of chemistry.

Book Information

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Customer Reviews

Robert Bruce Thompson is a coauthor of Building the Perfect PC, Astronomy Hacks, and the Illustrated Guide to Astronomical Wonders. Thompson built his first computer in 1976 from discrete chips. It had 256 bytes of memory, used toggle switches and LEDs for I/O, ran at less than 1MHz, and had no operating system. Since then, he has bought, built, upgraded, and repaired hundreds of PCs for himself, employers, customers, friends, and clients. Thompson reads mysteries and nonfiction for relaxation, but only on cloudy nights. He spends most clear, moonless nights outdoors with his 10-inch Dobsonian reflector telescope, hunting down faint fuzzies, and is currently designing a larger truss-tube Dobsonian (computerized, of course) that he plans to build.

This will be our first time creating a chemistry lab for high school (homeschool) so the information, content, safety advice and plethora of other information in this book is invaluable. Found a company online to order the author’s specific equipment and chemicals from for a fair price. I am looking forward to this new experience and finding the author’s information very similar to what I learned in college for organic and inorganic chemistry laboratory.

Well written and very concise. A great blend of hard science and hands on labs to break up the math. The introductory chapters concerning chemical labeling and storage is worth the book alone. If you are interested in chemistry at home, this book is a great resource to have in your lab.

I bought this book because of a renewed interest in Chemistry, a subject that I very well on in college, but forgot most of twenty years later. Based on the books’ description, I was hoping for a

book that was hands on, would cover the basics, and would lead me into more advanced chemistry at some point.The book did not disappoint - it by far exceeded my expectations. The first five chapters of the book were preparatory - maintaining a lab notebook, safety, what laboratory chemicals and equipment need to be purchased. The author offers cheaper solutions for chemicals or equipment that could be made by oneself or purchased cheaply from a grocery/hardware store. The fifth chapter describes the basics of lab practices - making weight and volume measurements, working with glass tubing, filtration, etc. These important details were very beneficial to me, as I had forgotten all of them.Chapter six and on were labs, which started from the basics, and became progressively more challenging. The labs are grouped by type (i.e., separating mixtures, solubility, etc). Each lab starts with some background information, but it is typically brief. It is recommended to purchase a chemistry text (although not necessary to do the labs). I bought the recommended book, and found it quite beneficial. The labs are not "child" chemistry, like making elephant toothpaste or baking soda fountains, but are high-school and college level, and beyond. Dangerous chemicals are sometimes used, as is necessary if you want to do real chemistry, but the author uses good judgment and uses safer chemicals where possible.There are a few experiments where an equation or some important details are not given - it seems that the author is trying to encourage the reader to do some research in a chemistry reference text. There are also questions at the end of each lab, and some of them are quite difficult.The author maintains a website and forum with errata and supplementary information, and also hosts a Youtube channel that complements the book nicely. For a small subscription cost ($18), there is an addendum that contains an answer guide for the lab questions at the end of each lab, as well as over 30 additional labs. I highly recommend that as well.This is by far the best book for home chemistry that I have found, and I am thoroughly pleased with it.

I bought this book for my 11 year old son who has a great interest in science and chemistry. I should point out that I also have a science degree in chemistry, so we have a head start in this direction. What I really like about this book is that it is very well-structured and takes you through chemical principles in an interesting way, but following a very rigorous methodology. It’s a great manual to not only do some fun and interesting stuff, but also to learn many of the fundamental methods and processes that will be used throughout a scientific career.Worth noting though that it requires quite a lot of specialised equipment and chemicals (and they are getting harder to get these days). Cheaper alternatives are suggested, but if you want to really do some meaningful chemistry then you will need to invest a bit in setting up your lab.But overall... a fantastic book!

If you are serious about chemistry this is the book to get, I could go on and on about the many things within its pages and its vast knowledge from the author, however I will tell you personally its been a great tool, and have found it to go hand in hand with other chemistry text books, although Dr. Robert Bruce Thompson gives some lecture it is geared more towards on hands Lab Time, which is wonderful, and gives the suggestion to pick up other text books like Chemistry the Center of Science which I have along with some other stuff including Math in Chemistry which have helped focus and amplify Dr. Thompson's book as you get in more to the reading and understand better as the end of this book gets pretty advanced, but because it is focused on hands on and little to no lecture it can be a bit challenging, but from the start it's great for someone who is beginning the science joureny. Filled with great tips on where to get chemicals on the cheap, supplies, what basic needed lab equipment is used for, and safety tips and practices. When this book first arrived I started reading it straight away and as the day ended I was nearing the end. Couldn't put it down. There is a great voice throughout the book, and even some humor. Also there are notes and points of view from experiences from other Doctors in the field. After reading it I can actually under stuff like MnO2, HCl, and 55tf-32=23/9=2.5(5)=12.5tc looks complicated but is actually converting Tempture from F to C. But all in all this is a great book and I recommend it to anyone who is interested or know someone who is interested in Chemistry.

Well written. It's a great source for the home chemist.

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