Keeping a Laboratory Notebook

Keeping a good lab book is difficult, and almost none of us does a good enough job with it, so I want to get you off to the best start I can. This is very important in a number of ways.

First, when you are doing a complicated research project, where you don’t know what is going on until you have done a lot of work, a good lab book will help you build up a clear picture of what you know and what you don’t. The person who does this well, will have a real advantage over anyone who does not, in terms of just who is going to figure things out first.

Second, a well-kept lab book will free your mind from remembering details, and it will help you focus on the bigger picture and avoid a lot of confusion. Once you have done a few experiments, you won’t remember exactly all the details about any one of them. Later, when you finally realize that you really do need to know something that seemed relatively unimportant at the time, if you are lucky, you will find it in your trusty lab book. If not, you may very well have to repeat a number of experiments. Again, the advantage goes to the person who knows how to keep a good laboratory notebook.

Third, when a project turns out to be really interesting and just keeps growing in scope, you will be able to use your lab book to bring a new person assigned to the project, up to speed.

Fourth, if you have to drop a project for a year or two and then you want to get back to it, your lab book should be good enough to enable this to happen without too much pain.

So how do I keep a good laboratory notebook? You can’t really do this by blindly following some set of rules. Instead, you should keep asking yourself “Is this written well enough for someone else to know what I am doing, why and how I am doing it?” A good test to keep in mind is that you, or someone else, should be able to use your lab book a few years after your initial work, and not have to repeat the experiments. I will be thinking along these lines in judging your efforts.
Some helpful points to keep in mind would be:

1. Keep the book in ink, and never cross anything out to the point where you cannot read it. Just draw a line through it and write a little note near the line as to what is wrong. You would be amazed how often some “mistake” turns out to be right after all!

2. Date each page as you start it, and begin a new page for each day. Leaving some blank space can be very useful for notes, etc. added later (with their own little dates).

3. Learn to make clear sketches with labeled dimensions, etc. showing what you are doing. A good sketch really is worth the proverbial thousand words.

4. When you are ready to take data, take the time to prepare a well-thought-out table and record the data in the table. Label carefully what the rows and columns correspond to and what the units are.

5. Leave a few pages blank at the beginning, so that as things build up and you know where important things are located you can write an index. This requires a lab book with numbered pages, and if yours does not have numbered pages, just write numbers in by hand as you go.

6. Graph your data in your lab book, as you take it. This will let you catch mistakes while you have the apparatus set up and working, as opposed to a week later when you will have to do everything all over again.

7. Use the last few pages of your lab book to record the names, phone numbers, email addresses, URLs, etc. of particularly helpful people or products.

8. Put your name, email address and phone number inside the front cover of your book as well as on the cover, with a short note saying that if anyone finds this book, please let you know.

9. When you come up with an idea that you think may be patentable, describe it to two colleagues, and have them sign and date your lab book saying that you disclosed such and such to them and they understand it.
10. Never remove any pages from your lab book. This can be fatal with regard to any disputes over a patentable idea or device.