

## **CHEMISTRY READING LIST**

### **General reading**

The Series of new Scientists books "the last word"  
New Scientist

### **More Chemistry based reading**

Chemistry Review magazine (free on the library website)

"The Mole": <http://www.rsc.org/eic/mole>

### **Good websites to check/complement your notes**

[http://www.docbrown.info/page19/AQA\\_GCE\\_chem\\_AS\\_2015.htm](http://www.docbrown.info/page19/AQA_GCE_chem_AS_2015.htm)

<http://www.chemguide.co.uk/>

<http://www.revisionworld.co.uk/level-revision/chemistry>

<http://www.knockhardy.org.uk/sci.htm> (also contains quizzes)

### **Quizzes to test yourself**

<http://www.chemistry-react.org/go/default/Test/Default> (website taken over by RSC, you will need to register for free; need to check.....)

## **BOOKS**

### **Popular Chemistry**

P.W. Atkins, *Atkins' Molecules*, Cambridge, 2003

P. Le Couteur and J. Burrenson, *Napoleon's Buttons: How 17 Molecules Changed History*.

H. McGee, *On Food and Cooking*, Harper Collins 2004.

D. M. Perrine, *The Chemistry of Mind-Altering Drugs*, American Chemical Society, 1996

R. L. Myers, *The 100 Most Important Chemical Compounds: A Reference Guide*, Greenwood Press, 2007.

B. Selinger, *Chemistry in the Market Place*, Harcourt Brace, 5th edition, 1998.

J. Emsley, *Molecules at an Exhibition*, Oxford, 1998.

J. Emsley, *The Shocking History of Phosphorus*, Macmillan, 2000.

J. Emsley, *The Elements of Murder; the History of Poisons*, OUP, 2005.

J. Emsley, *Molecules of Murder: Criminal Molecules and Classic Murders*, RSC, 2008.

J. Schwarcz, *That's the Way the Cookie Crumbles: 62 All-New Commentaries on the Fascinating Chemistry of Everyday Life*, ECW Press, 2004.

J. Schwarcz, *The Fly in the Ointment: 70 Fascinating Commentaries on the Science of Everyday Life*, ECW Press, 2004.

J. Schwarcz, *Let Them Eat Flax: 70 All-New Commentaries on the Science of Everyday Food & Life*, ECW Press, 2005.

### **Chemistry of Food**

J. Schwarcz, *An Apple a Day: The Myths, Misconceptions, and Truths about the Foods We Eat*, Other Press [sic], 2009.

P. Barham, *The Science of Cooking*, Springer, 2000.

H. McGee, *The Curious Cook*, Harper Collins 1992.

T. Lister and H. Blumenthal, *Kitchen Chemistry*, RSC, 2005.

### **Periodic Table**

P. W. Atkins, *The Periodic Kingdom*, Weidenfeld and Nicholson, 1995.

Primo Levi, *The Periodic Table*, Everyman's Library, 1995 (other editions available).

P. Strathern, *Mendeleev's Kingdom*, Hamish Hamilton, 2000.

J. Emsley, *Nature's Building Blocks*, Oxford, 2001.

### **Drugs and chemistry**

G. L. Patrick, *An Introduction to Medicinal Chemistry*, 2nd edition, Oxford, 2001.

J. Stone and G. Darlington, *Pills, Potions, Poisons*, Oxford, 2000.

J. Mann, *Murder, Magic and Medicine*, Oxford, 1992;

John Timbrell, *The Poison Paradox: Chemicals as Friends and Foes*, Oxford University Press, 2005.

### **Why Reactions Happen**

J. Keeler and P. Wothers, *Why Chemical Reactions Happen*, Oxford, 2003

W. E. Dasent, *Nonexistent Compounds*, Marcel Dekker, 1965.

## MOVIES RELATED TO CHEMISTRY

***Please check the certificates before you watch the films!!!***

*HIGHLY RECOMMENDED Lorenzo's Oil* (1992) When Lorenzo Odone (Zack O'Malley) develops a strange disease at age 7, his parents Michaela and Augusto (Susan Sarandon and Nick Nolte) learn everything they can about it and then develop a dietary cure that slows the disease; based on a true story.

*The League of Extraordinary Gentlemen* (2003) Characters from late Victorian fiction unite to defeat the evil Fantom in 1899; the former nurse Mrs. Harker (Peta Wilson) uses inorganic qualitative analysis to identify the traitor.

*Merci pour le Chocolat* (2000) Jeanne Pollet's (Anna Mouglais) quest for her parentage uncovers murder and the date rape drug Rohypnol.

*The Bone Collector* (1999) Quadriplegic New York City police detective and true crime book author Lincoln Rhyme (Denzel Washington) leads the investigation against a serial killer who leaves clues about the next murder site.

*Backdraft* (1991) Arson detectives Donald "Shadow" Rimgale (Robert DeNiro) and Brian McCaffrey (William Baldwin) investigate a series of arson/murders involving magnesium and a liquid called trychtichlorate.

*Flubber* (1997) Professor Phillip Brainard (Robin Williams) creates a flying rubber called flubber.

*Erin Brockovich* (2000) Amateur lawyer Erin Brockovich (Julia Roberts) develops chromium case against Pacific Gas & Electric and wins.

*The Constant Gardener* (2005) After activist Tessa Quayle (Rachel Weisz) is murdered in Kenya, diplomat husband Justin (Ralph Fiennes) searches for the reason.

*Bhopal Express* (2001) Events on the night of the 1984 Union Carbide factory explosion that released methyl isocyanate and hydrogen cyanide gases into the city of Bhopal, India.

*Mary Reilly* (1996) Devoted housemaid Mary Reilly (Julia Roberts) is capable of loving the retiring Dr. Henry Jekyll and the evil Mr. Edward Hyde (both by John Malkovich).

*I am Legend* (2007) As far as he knows, virologist Robert Neville (Will Smith) is the last living man on Earth. When he's not hunting wild deer that roam the island, scavenging canned goods, or working out, Neville is locked away in his basement lab. He's trying desperately to find a cure for a virus that was supposed to cure cancer but instead wiped out 90% of the world's population and turned almost everyone else into light-sensitive, hyperaggressive mutants. Neville possesses a rare immunity to the virus, and as a scientist, he's humanity's last hope.

*Soap Fight club* (1999) A nameless first person narrator (Edward Norton) attends support groups in attempt to subdue his emotional state and relieve his insomniac state. When he meets Marla (Helena Bonham Carter), another fake attendee of support groups, his life seems to become a little more bearable. However when he associates himself with Tyler (Brad Pitt) he is dragged into an underground fight club and soap making scheme. Together the two men spiral out of control and engage in competitive rivalry for love and power. When the narrator is exposed to the hidden agenda of Tyler's fight club, he must accept the awful truth that Tyler may not be who he says he is.

***HIGHLY RECOMMENDED Series: Breaking Bad***



## **EXTENDING YOUR KNOWLEDGE: RESEARCH ACTIVITIES**

Use your online searching abilities to see if you can find out as much about the topic as you can, including diagrams, structures and equations whenever possible.

**You can make a 1-page summary for each one you research using Cornell notes:**

<http://coe.jmu.edu/learningtoolbox/cornellnotes.html>

You will present your topic at some stage during the summer term.

### **Task 1: The chemistry of fireworks**

What are the component parts of fireworks? What chemical compounds cause fireworks to explode? What chemical compounds are responsible for the colour of fireworks?

### **Task 2: Why is copper sulfate blue?**

Copper compounds like many of the transition metal compounds have got vivid and distinctive colours – but why?

### **Task 3: Aspirin**

What was the history of the discovery of aspirin, how do we manufacture aspirin in a modern chemical process?

### **Task 4: The hole in the ozone layer**

Why did we get a hole in the ozone layer? What chemicals were responsible for it? Why were we producing so many of these chemicals? What is the chemistry behind the ozone destruction?

### **Task 5: ITO and the future of touch screen devices**

ITO – indium tin oxide is the main component of touch screen in phones and tablets. The element indium is a rare element and we are rapidly running out of it. Chemists are desperately trying to find a more readily available replacement for it. What advances have chemists made in finding a replacement for it?

### **Other possible topics to research**

Malaria and it's treatment (or other diseases)  
Art, chemistry of pigments and restoration  
Food additives, Maillard reaction and other food  
Asparagus wee, chili/capsaicin  
Tea coffee  
perfume  
Poisons  
Graphene and other Nobel prizes  
Stain removal and other washing media  
Hair dyes  
Pesticides  
Biochemistry: DNA and applications genetic engineering

Neurotransmitters and nerve agents/chemical warfare/anaesthetics/pesticides  
Fission and fusion  
Emission spectroscopy and Bioluminescence  
Xylitol or aspartame  
Painkillers and anti-inflammatory  
Green chemistry and paracetamol?  
Explosives  
Photography B&W and colours  
Extraction of Metals  
Georges I and Porphyria  
Glow sticks  
Hydrogel

## **LECTURES AND DAY TRIPS**

In less than a year's time, you will start the UCAS application process to enter University. You will have to write a personal statement and show some passion for the subject that you will choose to study at university.

It seems a long time away and anyway, you may not be entirely sure of what you want to do. Nevertheless, I would strongly advise that you start reading magazines and journals of scientific interests like the **New Scientist**. The LRC subscribes to a few. The librarian may be able to guide you.

I would recommend that you to attend a lecture on a topic that seems interesting to you: this may either confirm your interests or start a whole new passion.

We are extremely lucky in London to have access to a wealth of resources. I appreciate that some are quite late in the evening and are not exactly next door, but maybe you could arrange to go with a few friends?

Anyway, here are a few websites that you may want to investigate.

If you have any further questions, please do not hesitate to contact me.

### **The universities:**

UCL every Friday afternoon. They tend to cover a wide range of topics but list them with their dates so you can choose which ones to go to. It's free to anyone and easily accessible.

[http://www.ucl.ac.uk/phys/department/science\\_centre](http://www.ucl.ac.uk/phys/department/science_centre)

### **The Royal Societies**

Royal Society

<http://royalsociety.org/events/?type=public-lectures&year=&month=&direction=upcoming&video=False&audio=False>

Royal Society of Chemistry

<http://www.rsc.org/conferencesandevents/rscevents/chemistry-centre/public-events.asp>

The Central London branch of the British Science Association

<http://www.britishtscienceassociation.org/local-branches/go-event/map-local-events>

**Museums** are worth exploring, although many talks are during the day.

Science Museum

<http://www.sciencemuseum.org.uk/visitmuseum/events/talks.aspx>

Natural History Museum

<http://www.nhm.ac.uk/visit-us/whats-on/daytime-events/talks-and-tours/nature-live/index.html>

Wellcome Collection has weird and wonderful science

<http://www.wellcomecollection.org/>

**A bit further afield** Hampstead Science Society

[http://www.hampsteadscience.ac.uk/hss\\_prog\\_draft.htm](http://www.hampsteadscience.ac.uk/hss_prog_draft.htm)

Or Richmond Science Society [http://www.hampsteadscience.ac.uk/rss\\_prog.htm](http://www.hampsteadscience.ac.uk/rss_prog.htm)

**Finally** this weblink gives access to many other places including the Geological Society of London

[http://www.whatsfreeinlondon.co.uk/lectures\\_in\\_london.html](http://www.whatsfreeinlondon.co.uk/lectures_in_london.html)