

# ON LINE RESOURCES to teach chemistry

**For the last thirty years , the perception of chemistry and its teaching have changed a lot due to:**

- a reinforcement of the experimental aspect,**
- the arrivals of the new technologies.**

Its teaching have evolved towards the everyday life chemistry. That has changed the feelings for chemistry as well as its place at school.

In front of that, the evolution of the techniques and of the world has given the pupil taste and pleasure for what is instantaneously ready and available, easily accessible (a simple click allows so many things!).

# 1. Using Java applets to enhance online teaching

## Jmol

**Jmol** is an open-source Java viewer for three-dimensional chemical structures, with features for chemicals, crystals, materials and biomolecules. Features include reading a variety of file types and output from quantum chemistry programs, and animation of multi-frame files ,



<http://www.youtube.com/watch?v=sdBgUQe8sPM&feature=related>

<http://www.youtube.com/watch?v=NMKuEA3TvWU>

<http://www.youtube.com/watch?v=PQpdtUvsouo&feature=related>

<http://www.youtube.com/watch?v=w8uATDj-prs&feature=related>

Jmol, 3D modelling software : <http://jmol.sourceforge.net/download/>

With its user guide/database : [http://wiki.jmol.org/index.php/Main\\_Page](http://wiki.jmol.org/index.php/Main_Page)

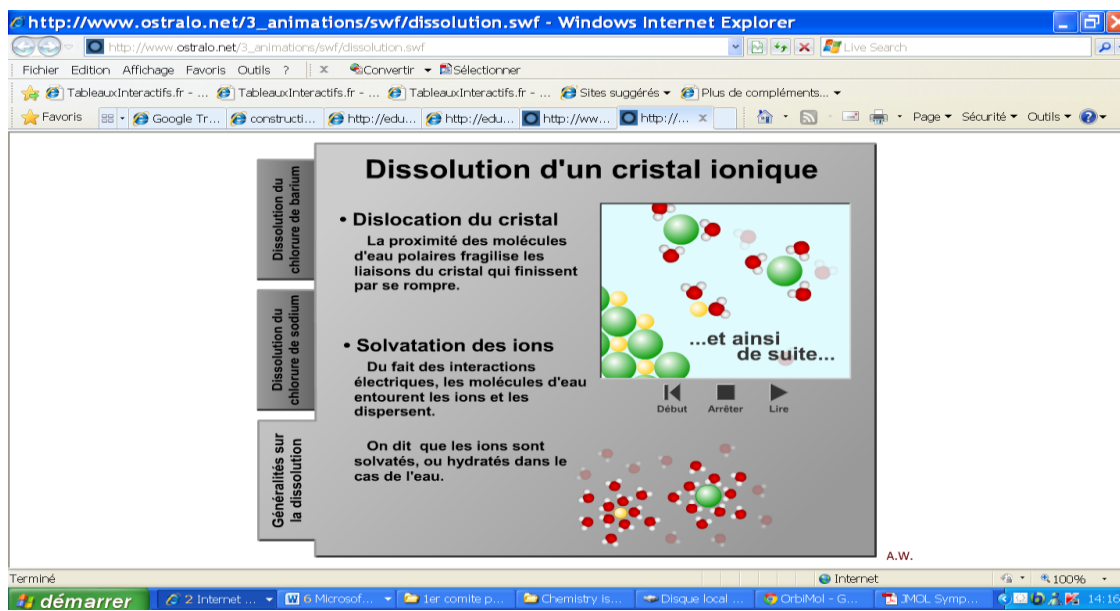
[http://www.elearning.eps.manchester.ac.uk/wpcontent/uploads/2011/05/Symposium\\_Publication.pdf#page=12](http://www.elearning.eps.manchester.ac.uk/wpcontent/uploads/2011/05/Symposium_Publication.pdf#page=12)

ORBIMOL : molecular orbital database (198 molecules). OrbiMol has been designed with Jmol applet <http://www.lct.jussieu.fr/pagesperso/orbimol/>

## 2. Using online animations

### TO SEE THE MICROSCOPIC LEVEL: modelling

This animation allows to see, on a microscopic scale, the dissolution process of an ionic compound



http://www.ostralo.net/3\_animations/swf/dissolution.swf - Windows Internet Explorer

http://www.ostralo.net/3\_animations/swf/dissolution.swf

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**Dissolution d'un cristal ionique**

- **Dislocation du cristal**  
La proximité des molécules d'eau polaires fragilise les liaisons du cristal qui finissent par se rompre.
- **Solvation des ions**  
Du fait des interactions électriques, les molécules d'eau entourent les ions et les dispersent.

On dit que les ions sont solvatés, ou hydratés dans le cas de l'eau.

...et ainsi de suite...

Debut Arrêter Lire

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[http://www.ostralo.net/3\\_animations/swf/dissolution.swf](http://www.ostralo.net/3_animations/swf/dissolution.swf)

Some animations online :

[http://www.ostralo.net/3\\_animations/animations\\_chim.htm](http://www.ostralo.net/3_animations/animations_chim.htm)

3D molecules [http://www.ostralo.net/3\\_animations/swf/molecule3D.swf](http://www.ostralo.net/3_animations/swf/molecule3D.swf)

The microscopic chemical reaction « efficient collisions »

[http://www.ostralo.net/3\\_animations/swf/reaction\\_chocs.swf](http://www.ostralo.net/3_animations/swf/reaction_chocs.swf)

Balance : [http://www.ostralo.net/3\\_animations/swf/avancement.swf](http://www.ostralo.net/3_animations/swf/avancement.swf)

Animations

<http://www.learnerstv.com/animation/animationcategory.php?cat=chemistry>

### 3. Using online periodic table

- Periodic table with model molecular and images:  
<http://profmokeur.ca/chimie/chimie.htm>
- Periodic table with all the information and the images of the elements :  
[http://archives.universcience.fr/francais/ala\\_cite/expo/tempo/aluminium/science/mendeleiev/index.html](http://archives.universcience.fr/francais/ala_cite/expo/tempo/aluminium/science/mendeleiev/index.html)
- Periodic table in English to be downloaded : <http://periodic-table.softonic.fr/telecharger>

## 4. ANKI, free software for learning, memorizing and revising :

<http://w3.umons.ac.be/perso/Villers.Didier/blog/2012/02/02/anki-un-logiciel-libre-dapprentissage-et-de-memorisation/>

Anki works by presenting identical flashcards (questions) until the right answers are given. For that, a repeated training is required with an increasing interval time. For more efficiency at the time of the learning sessions, the card that are difficult to memorize must be submitted again more often than those that do not pose problems

- 1) The teacher writes down his questionnaire and uploads it online for all the pupils
- 2) The teacher explains to the pupils how to use it and they can work at home at their own rhythm. Auto-evaluation before a test, for instance



## 5. Using online animation to see the scale of the universe

<http://htwins.net/scale2/>

When we speak about matter, molecules, cells, we can place, thanks to this animation, what we speak about according to the man size or any other similar element.

## 6. In-Class Active Learning with active board

Inforef supports the teachers who create course sequences with an active board

## 7. Pedagogical approach

**ICT impacts on students' learning and on teachers' professional development : towards a systemic approach**

[http://sticef.univ-lemans.fr/num/vol2011/03r-lebrun-tice/sticef\\_2011\\_lebrun\\_03r.htm](http://sticef.univ-lemans.fr/num/vol2011/03r-lebrun-tice/sticef_2011_lebrun_03r.htm)

In this paper, the professor LEBRUN proposes different methodological approaches, illustrated by concrete results from observations of hybrid learning environments on a LMS platform, in order to better understand reciprocal influences between technological setups (tools, uses) and their impacts on students learning and on teachers professional development in higher education.

**Pedagogic Model for e-learning**

<http://eductice.ens-lyon.fr/EducTice/projets/en-cours/scenario/INRP-2009-Seminaire-lebrun.pdf>