

The Molecular Workbench (MW) software offers interactive

Écrit par CR

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<http://mw.concord.org/modeler/>

The Molecular Workbench (MW) software offers interactive, visual simulations for teaching and learning science

Installation en local Molecular Workbench avec l'ensemble des animations :

<http://mw.concord.org/modeler/cd.zip> attention 79Mo

The screenshot displays the Molecular Workbench (MW) software interface. The main window shows a simulation titled "A hydraulic lever" with text explaining Pascal's Principle. A smaller window, "Annotate Snapshot", is overlaid on the simulation, showing a yellow speech bubble with the text "This is a simulation of osmosis." The simulation itself depicts a U-tube with a semi-permeable membrane in the center. Blue particles are on the left side, and green particles are on the right side. A red dashed line indicates the level of the liquid. Labels "Heat bath", "Vapor", and "Liquid" are visible. Below the simulation, there is a text box for describing the image and a "Describe this image in the box below" prompt. The interface also includes a browser address bar, navigation buttons, and a control panel with "Reset", "Rewind", "Stop", and "Play back or" buttons.

<http://mw.concord.org/modeler/faq.html>

lien vers le site pour téléchargement

<http://mw.concord.org/modeler/>

<http://mw.concord.org/modeler1.3/mirror/physics.html>

Mechanics

Pendulum

Double pendulum

Newton's Cradle

A mass hung on springs

Three masses linked by two springs

A block feeder

3D maze game box

Slider-crank mechanism

Pendulum, slider and spring

A suspended rope

Hourglass

A chain falling off a table

Weight balance on a pulley

A three-arm Geneva gear drive

A caterpillar track

Parallel gears

A water pump

A suspension bridge

The bean machine (Galton board)

Straight-line mechanisms

Drafting machine

Conservation of momentum

A stamping machine

A bike

Converting rotary motion into waves

An overshot water wheel

An undershot water wheel

A pump jack

Cycloid, hypocycloid and epicycloid

An inverted pendulum on an oscillatory base

A double inverted pendulum on an oscillatory base

The dainty walker

A crawler

Waves

Wave on a string

Fluid mechanics and dynamics

Archimedes' Principle of Buoyancy

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Pascal's Principle

Pressure conveyance through fluids

Pouring liquid

Water flow when a dam collapses

Particle flow in a rotating drum mixer

Controlling the flow in a box at your finger tip

Electromagnetism

Electroscopes

Visualizing the electric field of an electric dipole

Visualizing the electric field of an electric quadrupole

Electric field distribution of a parallel-plate capacitor

Electrostatic interactions between a charged balloon and a wall

Electrostatic maze game

Cyclotron

Charging your hair

Inverse electric dipole

Field effect transistor

Quantum physics

Junction field-effect transistor

Scan tunneling microscopy

Quantum mirage

Quantum corrals

Low-energy electron diffraction

Quantum motion in a magnetic field

An electronic star coupler

Quantum harmonic oscillator

Quantum transitions

Electron-nucleus interaction

Quantum tunneling (1D)

Quantum tunneling (2D)

Quantum dissipation and radiationless transitions

Electron diffraction through a single-slit pane

Electron diffraction through a double-slit pane

A particle in a rectangular container

A particle in a circular container

A particle in an elliptical container

<http://mw.concord.org/modeler1.3/mirror/chemistry.html>

Thermodynamics

Virtual experiment on gases

Brownian motion

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Maxwell speed distribution law

Stereochemistry of ethane

Ion transport

Distillation

Benzene trap and butane on gold surface

Motion of benzene molecules under van der Waals interactions

Motion of greenhouse gases

Loschmidt's Paradox

The barometric formula

States of matter

Gas laws

Comparison between gas and liquid

Comparison between liquid and solid

Intermolecular forces

Chemical bonds

Chemical bonding

Water and solution

Dissolving salt

Reactions

How chemical reactions happen

Chemical reaction equilibrium

Explosion

Homogenous catalysis

Polymerization

<http://mw.concord.org/modeler1.3/mirror/nanotech.html>

Materials science

Molecular crystals

Material strength: an impact experiment

Material strength: a free-fall experiment

Different phases of liquid crystals

Shockwaves

Nailing down

STM tips

Nanotube on gold surface

The collision between a C60 molecule and a xenon atom

The collision between a C60 molecule and a neon cluster

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Size segregation of particles on a vibrating base

Ripping a piece of duct tape from a surface

Atomic motion across a liquid-solid interface

Crack propagation and fracture

Sputtering

Nano applications

Water molecules moving through carbon nanotubes

Nanobud: a newly discovered material

Nano machinery

Nano differential gears

A hypothetical machine to operate at nanoscale

Molecular sorter

Nano conveyor belt

Molecular planetary gearsets