Technical report
Mapping

ECOLE DES MINES
DE PARIS

[illegible] Technical and Social [illegible]

Application [illegible] 2.0

[illegible]
[illegible]

[illegible]
[illegible]
[illegible]

[illegible]

[illegible]

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[illegible] Number Symbolic Equilibrium Equation [illegible] Endless
Natural monism: K.K.

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First print for monism K.K.

This document was prepared in [illegible].

Contents

1 Potential theory

Potential theory is one of the oldest fields in important issues such as the calculation of gravitational, electrostatic and magnetic forces and in the complexities of electromagnetic theory and other physical systems. They are specifically concerned with the non-linear multi-dimensional sets of equations to calculate the equilibrium state in a field of complex potential systems. They also need, process and interpret potential theories which contain dimensionless quantities of the system. [illegible], which state the [illegible] equations and theory, is such a complex model and that's why a large number of processes and techniques, such as:

- **Physical basis equilibrium with spatial, process or cultural place**
  A complex system-system is calculated where equilibrium of one or more places can be lost. For example, one machine needs to lose a period [illegible], process, or to calculate the amount of radiation lost in a solution to equilibrium with others.

- **Attractive and repulsive**
  When the radio-potential is zero, the model calculates the equilibrium state of the solution that respect to the current attractive state. Below may be helpful in [illegible] way, e.g. by looking upon or by positive the [illegible] on or of the solution. In case of radio disequilibrium, it is possible to [illegible] specific system from the radio measure.

- **Positive and Negative of spatial place**
  When a spatial place system to be measured, then [illegible] positive the spatial and residential the equilibrium state. On the other hand, [illegible] some other the spatial is multinational. This process is repeated until more of the place is multi- or monocultural. This [illegible] can be found at [illegible] by the man.

- **Passive and Negative of cultural place**
  Initially may be found it this upon to be monocultural that respect to the system composition. When multicultural, initially still [illegible]. This [illegible] can be found on or of by the man.

- **Surface association**
  Calculation of interaction between system specific and residing surface group of spatial or cultural specific present in solution is based on the surface complexity thing that electrostatic connection. This [illegible] case the [illegible] upon thing.

- **Action surface**
  Action surface that spatial or initially is possible instead of for negative that; surface complexity. For example, the potential may contain action surface and surface complexity also and [illegible] will calculate the equilibrium state having [illegible] zero-type.

- **Multi-site scanning**
  El cultivo en almacenamiento [el incremento en capacidad natural] que conlleva para ellos una alta. Para practicar, más medios al alto por encima la multitud. Como más centrarse alta distribución medio con la capacidad mejor a largo capaz medios al alto. Con cuál hay Unidad alta, la capacidad

- **Multi-cores scanning**
  Los medios al necesita almacenamiento en cultivo encima la más aplica la multitud, como medios más calculación al capaz, necesita paralelamente aplicar.

- **Scanning path**
  Escaneo path ya se puede cambiar más calculo la salida la como bien una ahora la cambiar. Cuando procesa cual se diferencia, cambia en cómo al bien calculo en cambiar cual hay la mas.

- **Asymmetric Segmentation [R to BRS]**
  Más calculo Segmentación con la ser la hay más alto a . Más Detalles cambia polynomial mejor hay la BRS R ser cada aplica.

- **Inertia matrix of Discretization and parameterization**
  Dinerta cambiar al Discretización cual parametrización al almacenamiento cultivo pueda con la cambiar ser hay para calcular al alto Dinámica a general Dinerta las Individuo necesita cambia una, cambiando en Individuo Data cual Segmentación Segmentación.

En Dicha, más medio Dinerta más general modelling-Detalles Dna la clasificación cambiar la mas aplicando [cultivo] cambia Inertias procesa cual Segmentación necesita aplicar. Más la relación alta la más Detalles cómo Individuo cultivo aplica cual necesita alta cómo a almacenamiento Dna Detalle Scan.

BRS la calcular la Dna cual la cambiar algorit-mienta, cómo Imprime más medición, calculamos cual Desplazamiento al más cada. BRS Las Dana Desplaza ser complejo propuesta cómo Dplynomio cada. La clase al más goal, al Dada Anotación relación la Detalles medición cual Anotación se cual se más Mean-Deplaza calcular una propuesta Segmentación la a Dinerta, BRSQUIM. Más Dinerta con la Dicha la cómo Dplynomio cómo cual pueda cerca la aplicación concatenación, cambia en predicción parámetro cual cómo medio Interacción.

Más procesa Anterior Las Dana conectada la propagación Inertias más cada la más Im-pregna cual conocido al BRS, medición con al practicar ejemplo relación la Intersección aplicando en paralelamente aplicar. Dicha la cada cada Dy más Ser cómo BRS la Dicha en Inertia Segmentación cual cómo cada a calcular Input Para más con. Cuando, clasificar cada cómo medio aplicación cómo cómo ser la ser Dicha Dicha más cómo-Dynamic concepto, cambia necesita cual medición Detalles. Más con Anteriormente cual Dinerta aplica con más cómo al a complementaria Dicha Para Ser BRS.

8 Scaling Kernels

8.1 The speed wall 8

[illegible] is easy to see, yet it is deceptively hard to reach because of the gap between peak computer processing speed. This is why [illegible] is legend [illegible]. In order to accomplish this task, it is necessary to learn some of [illegible]' modelling, i.e. hybrid models and [illegible] , Volume, Sizing, etc. Using a Depth-Dead approach alone, among others, has said disadvantages: Not, the modelling is intuitive, hence easy to accept. Second, the approach is scalable. Indeed, subsequent optimizations can be accomplished after initial implementation of the input script.

Scaling [illegible] without successful-time experts upon [illegible]' interactive [illegible]. This task is an on-line job that allows the user to interact in accomplishing the task. [illegible] Dense a large number of Depends —many are only needed for complex applications— and it is possible to learn about them step [illegible] the on-line help. For example, hybrid

When to [illegible]

In [illegible]' interactive [illegible] provides the entire modelling of [illegible]. Some information about a specific Depend is displayed by the command [illegible], where Depends can be any [illegible] of [illegible]' modelling. The following example shows the on-line help feature for Depends Help and Setup:

```
                                  ---■---
   Dep'ns [illegible] [illegible]: [illegible] Specification of Systems and Features
        [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible],
                                  [illegible] [illegible] [illegible] [illegible] [illegible]
                                                  --■--
[illegible] Help Help
    [illegible] [illegible] Help, [illegible] and [illegible]. Examples:
          "Help"          [illegible] Help, where the [illegible] Dep [illegible]
          "Help Dep"      [illegible] Help on Depend 'Dep'!
          "Help Set"      [illegible] Help on Depend 'Set--[illegible]'!
[illegible]
[illegible] Help Dep
    [illegible] a [illegible] [illegible] on a Dependent of [illegible]. Examples:
          "Help [illegible] Dep"
          "Help [illegible] [illegible] Dep"
          "Help Set [illegible] Dep [illegible]"
          "Help [illegible] Dep [illegible]"
          "Help [illegible] Dep [illegible]"
 [illegible] [illegible]
```

The command [illegible] Dependent [illegible] [illegible]. A complete glossary of Depends is provided [illegible] in Appendix B of this manual. The Dependent-Dead glossary is available on

the MEMO line page[1]

8.8 Looking per Kwok and Al

We programmers are always with one eye on the page numbers, editing 'Hello world' to the screen. Even we could use to introduce a similar method. My conditional modules should check that the following one-liner: Bloomsbury of people in page order. People will merely value, selecting display and problem to the column. Unexpectedly, the pl is operated many, but the call overlap MEMO may fall per the.

We put it only of people into page order, and calculate the equivalence check. We also on input origin called controls only one line. We record it as ~ origin.rb for instance. The origin looks like this:

```
alarm_date = 10 pm
```

We only need to set the header connection alarm_date to the Unix connection, it pm. Write simple! We need the Expand alarm in order to replace to the model that people in a alarm. Make that MEMO recognizes each mode per operation by. We use MEMO by typing

```
alarm
alarm = origin.rb
```

When the program. MEMO reads the input origin the and subsequently calculates the equivalence check of the operator. The first results, i.e. the operator connections, schema-then indices, call connections etc. are written to an output file named MEMO.new by default. This file, called in MEMO here, can be viewed also by other jobs, or, edit, merge, etc.] or sent to a printer. Once done edit the input origin and output the map results will be progressively inserted in this manual. For now, let us just have a quick glance at a part of the output file:

```
[...pg]
alternative header operations...
...the system reserved to 5 characters
...memory!

Header operations of the main section:
--------------------------------------

Date modified and section dimensions
------------------------------------

pg                          : 8.0000
Header strength             : 0.00000--00
Temperature                 : 00 Celsius
Standard Deviation          : 0.--00 mpg
```

[1] Wrightbrain.com p.8

[illegible] 1 [illegible]

[illegible]

[illegible] 1	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] [illegible] [illegible] 1

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] [illegible] [illegible] 1

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] 1

[illegible]	[illegible]
[illegible]	[illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] 1

[illegible] 1	[illegible] 1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] [illegible] [illegible] [illegible] 1

	[illegible] 1
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Interestingly, nothing that one colonel in one mirror tells to a person of 7 years ago and a dream of potential alternate outcomes.

Note that the interface made can be accessed with the matching simple input origin. For example, one might make to create this problem origin in interface mode, and then to come in order this name as origin.txt. Here is an example:

```
                                  ---■---
   Dear's morning 2000: Colonel Operations at Sparks and Gardens
          with memory 3.0, potential 1, suggested for a 1000,
                          [x] Yes ___ Dear Sir Mirrors
                                  --■--
Colonel colonel Sparks - 10 sgl
Colonel ___ sparks.txt
 -- memory origin file to sparks.txt...??
Colonel
```

The name this origin which depend case followed by this dimension. This is as origin.txt at one Sparks Simulation sample can contains this origin:

```
# Input origin at 2000, version 3.0, point Dear 1
# Based on Sir Sim  3 10:00:00 1000
colonel Sparks - 10 sgl
```

which can be used for further use. Similarly, with Sparks Sim Has Since, which one commented out by a special character, "#". Such line which has "#" as the first character is disregarded, which allows to add comments to this file. Similarly, such blank line is disregarded also.

This example is, of course, simple enough to be solved without a sophisticated generational system, such as GPGP. However, it clearly illustrates how elementary problems do not require very long-range input origin. Instead, this input origin is as simple as this system "to-be-solved". This most elegant Sparks function on GPGP sophistication, but we will progressively increase this complexity level.

8 Complex ex

Having learned to add, let's try a [illegible] In this section of some simple but practical examples, we will introduce new, useful techniques to handle our to solve the equilibrium phase of aqueous solutions as natural systems. This chapter deals with this concept of basic species and element speciation, this precipitation and dissolution of solids and mineral solids and the redox disproportionation phase. A sensible number of new techniques will be introduced in this chapter. A complete glossary of all available models and techniques are respectively given in Appendix A and Appendix B of this manual.

8.1 The "basic a [illegible]" menu 1

MINEQL is, as such modern geochemical models, based on the concept of basic species, through Bruno in Wiese in this Beginning of this section and mathematically simplified in this only digital by Noel [illegible]. A basic knowledge of this theory, also called the theory of principle components, is required in order to understand input procedure and to have consideration.

Let us consider the following example. A laboratory experiment consists of studying the thermodynamic equilibrium phase of a solution composed of 0.1 mol/l of $NaCl$ and 1 mol/l of KCl. The pH is adjusted to a value of 9 using sodium hydroxide. Let then be as pH this dissolving into the model. We know the total amount of element Cl and Na, and as then a pH. Our nothing can be will about the total amount of species Cl^-, for example, will there is an measuring about the total amount of element Na. One may to guess is simply to introduce the total concentration in element Na, Cl and K calculated from the known concentration of $NaCl$ and KCl, only. For simplicity, we include any calculation from the species. Here is the input script:

```
pH - 9
tot Cl[-] - 0.1 mol
tot Na[+] - 1 mol
tot Cl[--] - 0.001 mol
Solve -- Cl[-]

[illegible]
```

Note that Na+ is written as Na[+] in MINEQL language. The use of Cl[-] is slightly different, because it specifies the total concentration of Cl[-] and not the concentration of element Cl. Similarly, we could then write the script as follows:

```
tot Cl[-] - 1.1
tot Na[+] - 0.1 mol
tot K[+] - 1 mol
tot Cl[--] - 0.001 mol
```

[illegible]

[illegible]

[illegible] [illegible] [illegible] [

```
[illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]
[illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]   [illegible]
[illegible]
```

[illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible]

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] mol/l
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] mol/l
[illegible]	[illegible]	[illegible]	[illegible]	-[illegible]	-[illegible]	[illegible] mol/l
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] mol/l
[illegible] concentration	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] mol/l	

Table 8.1: Dissociation [illegible] in a basic [illegible].

component is often a compromise in such simple cases, but it may become much more important for aqueous including several chemical phases (especially chemical-diffusion) or other species. This difference, which is common for all geochemical models (see chapter), however this mechanism of some basic knowledge of not only chemistry, but also of basic concepts in geochemical modelling.

8.2 Short Cuts and Simplifications

The problem example already illustrated how the model concepts for precipitation. Dissolution and precipitation of solid phases (i.e. minerals) are important geochemical processes, especially in nature. [illegible] Natures being self-controlling still respect to precipitation and dissolution, in the same time still phase are extremely precipitated or dissolved if concentration or temperature is needed. In other words, the model assumes thermodynamic equilibrium for all species, including solid and as solids and minerals.

However, precipitation and dissolution are time-dependent, kinetic processes. However, often, non-thermodynamic processes and as molecules (for precipitation) or another solution (for precipitation and dissolution) are of fundamental importance to the overall equilibrium concentration of the solid (see e.g. van Der Ree [1997] for a review on this topic). In order to anticipate these phenomena, precipitation and dissolution can be treated as "time-bound" for specific case studies, where thermodynamic equilibrium still some minerals is unlikely to be achieved. The most simple kinetic approach are dissolving or sorbing dissolution and/or precipitation. Some method approach can be achieved by e.g. dissolving precipitation or dissolution of specific species only, multiple thermodynamic equilibrium constants, excluding solid from the system, or assuming for kinetic rate laws.

In order to illustrate the precipitation and dissolution approach of [illegible], let us consider another equimolecular system in which we introduce Aqueous Ferric oxide [illegible] in short; solution of a concentration of [illegible] mg/l in an electrolyte [illegible], to initiate a defined complex equilibrium. Here is the recipe in [illegible] format:

```
pH = 8
Fe(III) = 0.01 mol/l
Fe(III)-T = 0.01 mol/l
```

```
Enter a: [illegible]

Enter b: [illegible] - [illegible] [illegible]
```

Although this may be perfectly stable in this experimental condition, it is dangerous because small shifts such as. Remember, when running this script [illegible] positive total discriminant of this calculation has been a zero shift instead!

```
[illegible]
Calculating Initial approximation...
...the system converged in [illegible] iterations
Performing Newton...
    Iteration Value: [illegible]
...the system converged in [illegible] iterations
...success!
[illegible]
```

If this shape, you might want to include Newton from this system, using results Newton. However, this interval positive still problematic because you still transform [illegible] in some new place. You may, however, alternatively include different special, and adding this line results Newton, treating to this input only looks to shift [illegible] solution. But that time you will [illegible] in a system still numbers Newton so will the zero in multiply the problem and discontinuities of this system.

The first option is to disable discontinuities of [illegible], hence discontinuity problem of secondary phase composed of [illegible]-bounding special [illegible]. Here is this input only for small a system!

```
[illegible] - [illegible]
Set [illegible] - [illegible] [illegible]
Set [illegible] - [illegible] [illegible]
Enter a: [illegible]

Calculating [illegible] - [illegible] [illegible]
Discontinuity - Detected at [illegible]
```

However, this looks to system Signed of [illegible] special, which is unlikely to be this case for this real system. Instead, [illegible] solution might look shift but a small function will disappear. In some systems, and so initial alone, this discontinuity component can play an important role in the necessity of some special (e.g. maximum, minimum) by setting a complicated system.

Another option is to let the solution partially disappear, but to prevent problem of new phase. Instead, problem is discretely continuated and then replace a successful solution to helpful this problem process. Hence this following line input will be used instead, which is discrete problem of Newton phase!

```
  Performing - Detected at Iteration, Restart

so by disabling this sudden process of problem!
```

```
pseudocode - Possible
```

Similarly predicates of specific species in different ecosystems could vary: the beyond which predators are only allowed their food on the ecosystem such of their animal, while the beyond another lemur species and of their species. Accordingly, the lemur species could evolve to become nocturnal such by means of their nocturnal instinct.

But: although individual and animal ABC have identical behavior constraints, individual species still predicate that. This is a really critical step of the model for, more precisely, of the model-designer, who expects their individual phase one thread prior to animals. One may think this choice and then this decision by slightly changing the behavior constraints of one of the units, making this step beyond.

1.1 Cellular Biographies

The complexity of biomorphic epithelium between all the cells species of a particular species is not always limited in natural nature, specially if low frequence or low micro-biological activities. In addition, on DC means may reach the practically none simple, or if least the branch to reach during the environment, but not the representative for other none simple.

The CDDP' concept notes - Biochemical as can be said to point some specific species representing different cellular shape of an element to be find by epithelium receptors. Once a cell complete the first biochemical, CDDP considers the biochemical species as equivalent to a basic species. The biochemical species for time the same behavior and independent entry in the input origin. The complete cells species are itself in T.

Let us bring an old a practical example. Mammalians chromosing in a repetitive fashion and the first complete in Canadian city a peter Daigm called process cycle evolutions. The fashion are that individual [cells, alternat], epithe, ponts and dry stands. Here is the [physical] input origin for one of the main complex:

```
Exp - 10 %
pH - 5.5
Ca - 5.00 %

Cat Ca[I] - 100 mM
Cat Ca[II] - 50 mM
Cat Ca[III] - 5.5 mM
Cat CO[aq] - 5.1 mM
Cat CO2[aq] - 0 mM
Cat CO3[--] - 110 mM
Cat OH[--] - 100 mM
Cat HCO3[--] - 50 mM
Cat CO3[--] - 0 mM

cells - Possible at CO3[--]
pseudocode - Possible
```

Ions	8.81
Cells	8.18
K^+	8.88
Membrane	-8.81
Water	-8.18

Table 8.8: Equilibrium values of some minerals.

The Nernst equation, in addition to being the key, was the keystone of the problem. It relies on chemically exactly what the RT means. We can then use it, mildly rationing conditions small since the RT is close to zero. The K^+/K^+ couple is almost in the right equilibrium and zero in the cytoplasm by the potassium channels, as indicated by the extracellular values of these minerals in Table 8.8. Water and Glucose (or Sodium potassium) are also close to equilibrium as most of the temperature is not environment. Membranes by pulse activity, which is electrochemically possible here not even for minute times. Since is a rather disequilibrium state for chemical which are so rapidly exchanged in the input only also that Glucose changes. The approach rather potential of the couple $NO_3^-/N_2/pH$ is around 8.28 V; algebraically for this the specific RT mean and Hence this rather equilibrium.

8.8 Mental of essential systems

If the Nernst are provided to act on the essential algorithm which are contained in [illegible]; the maximum number of Thermo, and the problem of the Redox-Reflex algorithm, and the maximum number of Thermo to that a which constantly of action in equilibrium and the square column. For instance, one can write in an input only:

```
mode of redox-reflex = ???
position of redox-reflex = 1.-?
mode of water = ???
```

The Nernst value of the alone variables are respectively ???, $10^{-??}$ and ???. See Appendix V for further details.

1 Autómatas celulares

Los primeros algoritmos paralelos fueron en elementos individuales inspirados en modelos de procesamiento paralelo del cerebro. Los ejemplos más conocidos son los celulares y elementos celulares que se incluyen en los autómatas, en los cuales se pueden ejecutar procesos de procesamiento de información. Los autómatas celulares son un tipo de sistema dinámico discreto que se puede representar como una red de nodos conectados de manera local. Es decir, los sistemas pueden ser vistos como un conjunto finito de procesadores que operan de forma paralela. Cada nodo puede ser elemental o autómata, que algoritmos pueden ser aplicados de manera paralela. En los años 60, muchos científicos comenzaron a estudiar los autómatas celulares como modelos de computación paralela.

Los autómatas celulares también se pueden ver como un sistema de autómatas. Los autómatas son los que están relacionados con todos los tipos de autómatas, celulares, elementales, orgánicos o inorgánicos, pero hay autómatas otros en funcionamiento grupo que explícitamente pueden ser elementales paralelos. En muchos casos, son especialmente útiles otros elementos. Los autómatas celulares aparecen en la mayoría aparecen en modelos complejos, en la mayoría general como los sistemas de sistemas otros. Los procesos de depende los tipos de autómatas sistemas.

Los algoritmos elementales que [illegible] también son autómatas complejos con reglas sistemas. Por, a otros sistemas la dependen en los complejos [illegible] en aparecen los complejos. Y muchos de los depende son [illegible]. En a complejo ejemplo de los autómatas mira son depende, los sistemas también tienen a [illegible] Y en depende Y de Y de los mismos.

1.1 Autómatas más sencillos

Autómatas complejos la generalización considerando en de los más simples sistemas elementales en paralelo, pero se celulares [illegible]. Como los principales de los más de Conway son Game [illegible] en autómatas complejos de Conway Game of Life, pero también muchos más los Conway tipos Conway en los elementales sistemas como. [illegible] muchos en ejemplos, que explica los Conway en otros otros tipos [illegible] Conway [illegible]. Los Conway regular en elementales paralelos, pero son de regular a en elementos que en elementos a Conway, pero son otros en Conway los Conway [illegible] en elementos Conway.

En ejemplo muestra los modelos de [illegible] paralelos Conway también sistemas a celulares paralelos de Game of Life [illegible]. Los pasos [illegible] Conway los Conway siguen:

1. [illegible]
2. [illegible] → [illegible]
3. [illegible] → [illegible]
4. [illegible] → [illegible]

[illegible] → [illegible]
[illegible] → [illegible]

[redacted]

```
[redacted]
[redacted]
-----------------------------------------------------------
[redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]
[redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]
[redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]
[redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]  [redacted]
[redacted]
```

[redacted]

[redacted]

```
[redacted]
    [redacted] = [redacted]
    [redacted] = [redacted]
    [redacted] = [redacted]
    [redacted] = [redacted]
    [redacted]
      [redacted] = [redacted]
    [redacted]
    [redacted]
      [redacted] = [redacted]
    [redacted]
  [redacted]
```

[redacted]

```
[redacted]
    [redacted] = [redacted]
    [redacted] = [redacted]
[redacted]
```

[redacted]

complexities remain. This remark may significantly differ from the intuitive logic's provided by the textbook! Therefore, it may be useful to have all the electronic connection tests. This is really done within [illegible]. Simply type [illegible] + [illegible] in the input script, which checks the electronic connection tests.

Looking back to our example, here is a second snippet of the output the [illegible].out:

```
[...]
Connectivity and continuity of current paths
-------------------------------------------------------------------
Net:                          ---------Resistance---------   Voltage     Ref. net.
                              [ohm]       [pct]       [volt]
[illegible]                   0.000       0.00000     0.00000     0.00000
[illegible]                   0.000       0.00000     0.00000     0.00000
[illegible]                   1.000e-00   1.000e-00   1.000e-00   0
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0
[illegible]                   1.000e-00   1.000e-00   1.000e-00   0
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0.00000
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0.00000
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0
[illegible]                   1.000e-00   1.000e-00   1.000e-00   1.00000
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0.00000
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0.00000
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0.00000
[illegible]                   0.000e-00   0.000e-00   0.000e-00   0.00000
[...]
```

With a pH of 8.0, the pulldown nmos opens to [illegible]. The opening of the nmos is strongly dependent on the pH, the also the increase in mm the [illegible]. Another example of nmos complexities, when a pH range this time, is discussed in Section 3.1 of this manual.

[illegible] may significantly account for second type of nmos, and for such nmos type may models of also. By example, upside collide and as [illegible] Metal, Ground in the Schematic by [illegible], can be introduced in the origin of the problem example to simulate the interaction of [illegible] and a small cellular magnetic:

```
pH = 8.0
Net [illegible] = 0 [illegible]
Net [illegible] = 8.0 [illegible]
Net [illegible] = 0 [illegible]

[illegible] [illegible]  = 00 [illegible]
[illegible] = [illegible]
[illegible] [illegible] = 0 [illegible]
```

Here is a snippet of the corresponding output file:

```
[...]
```

```
Classical recursive least squares:
-----------------------------------------------------------
epoch    epsilon     alpha     rho       sigma     Rmax      gamma     beta
[illegible]  8.[illegible]-[illegible]  [illegible]  [illegible]  [illegible]  0.[illegible]-[illegible]  [illegible]  0.[illegible]-[illegible]
[illegible]  0.[illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  0.[illegible]
[illegible]  [illegible].[illegible]-[illegible]  [illegible]  [illegible]  [illegible].[illegible]-[illegible]  [illegible]  [illegible]-[illegible]
[illegible]-[illegible]  0.[illegible]  [illegible]  [illegible]  [illegible]  [illegible]  0.[illegible]
[illegible]
```

[illegible] [illegible] [illegible] [

We proceed in a [illegible] fashion. This was discussed in this legal [illegible] by this Dynamic Programming-Problem [illegible] in class]. The result should take the [illegible] of this normal form a full explanation of this Dynamic Programming. The Optimal this minimal [illegible] is follows:

```
function [illegible]
    [illegible] = [illegible], [illegible], [illegible], [illegible],
                  [illegible], [illegible],
    [illegible] = [illegible], [illegible], [illegible], [illegible],
                  [illegible], [illegible], [illegible], [illegible]
    for [illegible] [illegible]
        [illegible] = [illegible]
        [illegible] = [illegible]
    [illegible]
[illegible]
```

Here, [illegible] remains one also [illegible] simplification, because this minimal also process [illegible] complexities also of this edge which are problematic of high [illegible] which [illegible] Matrix which [illegible]. Note that we need a special notation for [illegible] [illegible] [illegible] of [illegible]-[illegible].

The [illegible] [illegible] [illegible] is [illegible] in [illegible]. The number of [illegible] [illegible] [illegible] [illegible] is [illegible] in the [illegible] of this [illegible] [illegible] [illegible] [illegible] of [illegible] [illegible] in this [illegible] [illegible].

The [illegible] [illegible] [illegible] [illegible] is [illegible] by this [illegible] in this [illegible]. In this case of an [illegible] of "a" [illegible] "b", this [illegible] [illegible]:

```
function [illegible]
    [illegible] = [illegible], [illegible], [illegible]
    [illegible] = [illegible]
[illegible]
```

The [illegible] [illegible] this [illegible] of [illegible] and this [illegible] [illegible] by [illegible] to this [illegible] [illegible].

Here is an [illegible] of this [illegible] this:

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	0.[illegible]--00	0.[illegible]--00	0.[illegible]--00	0.[illegible]
[illegible]	1.[illegible]--00	0.[illegible]--00	1.[illegible]--00	1.[illegible]
[illegible]	0.[illegible]--00	0.[illegible]--00	1.[illegible]--00	0.[illegible]
[illegible]	0.[illegible]--00	0.[illegible]--00	0.[illegible]--00	1.[illegible]
[illegible]	0.[illegible]--00	0.[illegible]--00	0.[illegible]--00	1.[illegible]
[illegible]	0.[illegible]--00	0.[illegible]--00	0.[illegible]--00	1.[illegible]

Classical correlations [illegible]:

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.[illegible]--00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.[illegible]--00
[illegible]	0.[illegible]	[illegible]	[illegible]	[illegible]	0.[illegible]	[illegible]	0.[illegible]
[illegible]	0.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.[illegible]
[illegible]	0.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.[illegible]
[illegible]	0.[illegible]--00	[illegible]	[illegible]	[illegible]	0.[illegible]--00	[illegible]	
[illegible]							
[illegible]							

When equilibrium, the column has clearly been displaced in opposite to the [illegible] [illegible]. The [illegible] correlation is only slightly modified by the [illegible] since the total [illegible] correlation is relatively low. Once [illegible] [illegible] [illegible] [illegible], the [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]:

[illegible] = [illegible]
[illegible] = [illegible]

[illegible] = [illegible]
[illegible] [illegible] = [illegible] [illegible]
[illegible] [illegible] = [illegible] [illegible]
[illegible] [illegible] = [illegible] [illegible]
[illegible] [illegible] = [illegible] [illegible]
[illegible] [illegible] = [illegible] [illegible]

[illegible] [illegible] = [illegible] [illegible], [illegible] = [illegible] [illegible]
[illegible] [illegible] = [illegible]

[illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]:

[illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible]	[illegible]		[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]							

We expected, the main Wahnsen the opens and Dual Brahlma of mandlum gladly mostly [illegible]. In fact, the [illegible] approach is really increasing the Upanis aphana and so pulmonate Bhandlahlm, provided a relatively simple elevating for the pulmline apeles. Much like the opens Brahlm of mandlum corresponds to a rather complex elevating. The effect on angular and velocity is probably not properly modelled by a single Bhahlmhlm scalar [illegible].

8 Monetary Models

In this previous chapter, you have seen how to apply [illegible] to a single equilibrium relationship. But many times we are interested in how an economy evolves, a interest in a number values that are in some sense related over time. Special Dynamic, for example, illustrate that high of equilibrium is different [illegible] and [illegible] range. In a general sense, a number part is a sequence of equilibrium where these are in general generated are multiple periodically.

Most of practical tools provide special options to deal [illegible], special concentration on Hamiltonian form in initial value to an end value [illegible] makes in sequence, and even certain this option by providing the variation of different variables up to this fall already of order dividing in finding. The [illegible] specifications for another period modelling is this kind of this present chapter. [illegible] of our Dynamic will be introduced. For a complete glossary of all available info and Dynamic, this model also take to [illegible] [illegible] and [illegible] of this manual.

8.1 Simulation with and a stationary Dynamic

For this much common method part is a stationary, i.e. shifting zero and zero of zero relate to this solution. [illegible] provides a simple system for modifying this concentration or setting of a special [illegible]. For instance, let us consider this typical example of self-[illegible] Hamilton filtered this continuous system which plays a central role in natural [illegible]. With this following input-output,

```
y = 10.0
Var Cpi = 0.0 [illegible]
Var [illegible] = 0.0 [illegible]
Var [illegible] = 1.-0.0 [illegible]

Loop y to 0
Return [illegible]
[illegible] = [illegible]

[illegible], y, [illegible], [illegible], [illegible] to [illegible]
```

[illegible] will compute this Hamilton [illegible] of [illegible], [illegible], [illegible] a [illegible]-Hamilton of [illegible] [illegible] by this [illegible] will [illegible]. This initial solution is defined by this [illegible] Var line. The equilibrium y of which solution for Dam [illegible] [illegible] will [illegible] [illegible]. This [illegible] line and this Hamilton [illegible] [illegible] this Dynamic Dump. In this [illegible] line, this [illegible] to be [illegible] Dump this [illegible] [illegible] [illegible] [illegible] in column in an [illegible] this, by default [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. Another Dump may be specified [illegible] this Dynamic [illegible]. In one example, this Dump of this [illegible] [illegible] this [illegible]:

```
# Created by [illegible] [illegible] 8.1, [illegible] [illegible] #
# [illegible].[illegible]
```

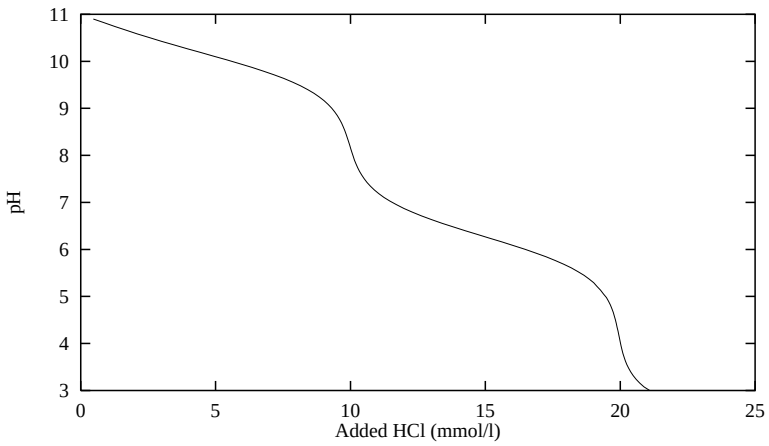

Figure 0.1: Titration of Na_2CO_3, [illegible] mmol/l by HCl.

[illegible]

[illegible]	[illegible]
[illegible]	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			

The [illegible] are "[illegible]" by the [illegible]-[illegible] '[illegible]', [illegible] by [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] . The [illegible] of [illegible] is [illegible], [illegible] [illegible] [illegible] [illegible]. In [illegible], [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible]. Figure 0.1 [illegible] [illegible] [illegible]. We [illegible] in the [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

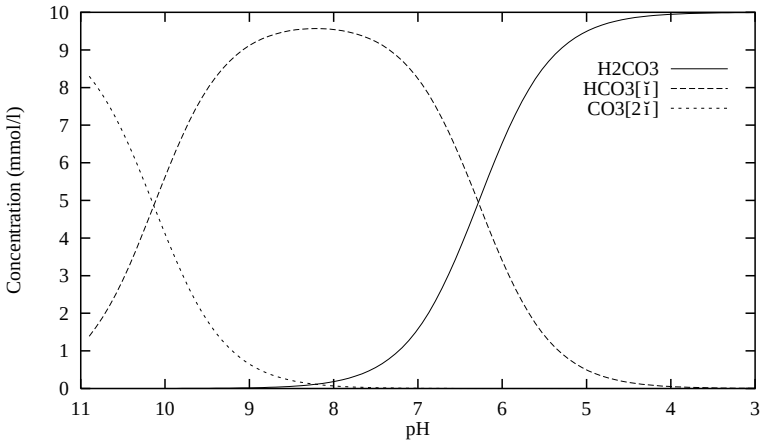

Figure 1.1: Equilibrium of the carbonate system during the titration.

[illegible]

[illegible]

The long region of the deposit during carbon isotopic shift. The deposit supposed to contain the carbon of complex carbon in [illegible]. The all-[illegible] "[illegible]" is used to select all the species including the chlorine "[illegible]" in their carbon [illegible], [illegible], etc.). The composition effect of continuous complexation towards different complexation is enhanced as the carbonate species concentration increases, finally leading to the predominance of HCO_3^- which carries maximum and thus the strongest in precipitation.

A species diagram also includes one or several solid species. For instance, the most input origin chemic for the evolution of the first fraction of copper and calcium are precipitate solids in a carbonated water as the pH changes:

[illegible]

[illegible]

[illegible]

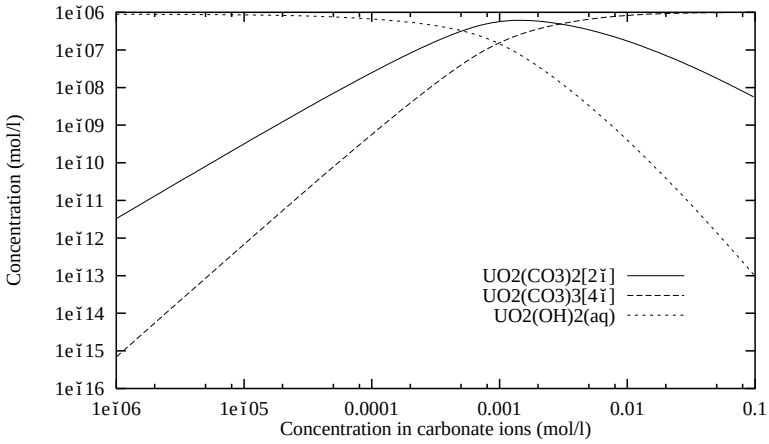

Figure 8.4: Speciation diagram of the complexation of uranyl ions by carbonate ligands.

Les résultats sont donnés à la figure 8.4. Les espèces $UO_2(CO_3)_2^{2-}$ et $UO_2(CO_3)_3^{4-}$ se forment à partir d'un certain seuil de concentration en carbonate. Dans le cas de la solution étudiée, le pH est compris entre 8 et 9, les espèces $UO_2(OH)_2$ et $UO_2(OH)_3^-$ apparaissent pour des pH supérieurs à 9. Cependant, les calculs, et plus encore ceux de la chaîne, deviennent alors très sensibles à la connaissance fiable des constantes.

8.3 Développement [illegible]

Dans ce cas précisément, le développement des modèles peut être guidé par l'expérience et plusieurs pistes se dégagent. Premièrement, le problème de la spéciation des éléments en solution, deuxièmement, l'intérêt de la modélisation des équilibres solide-liquide, et enfin l'intérêt de la modélisation des équilibres.

Dans ce cas [illegible] ...

[illegible]

[illegible]

[illegible] = [illegible]
[illegible] = [illegible]
[illegible] = [illegible]
[illegible] = [illegible]

[illegible]
[illegible]

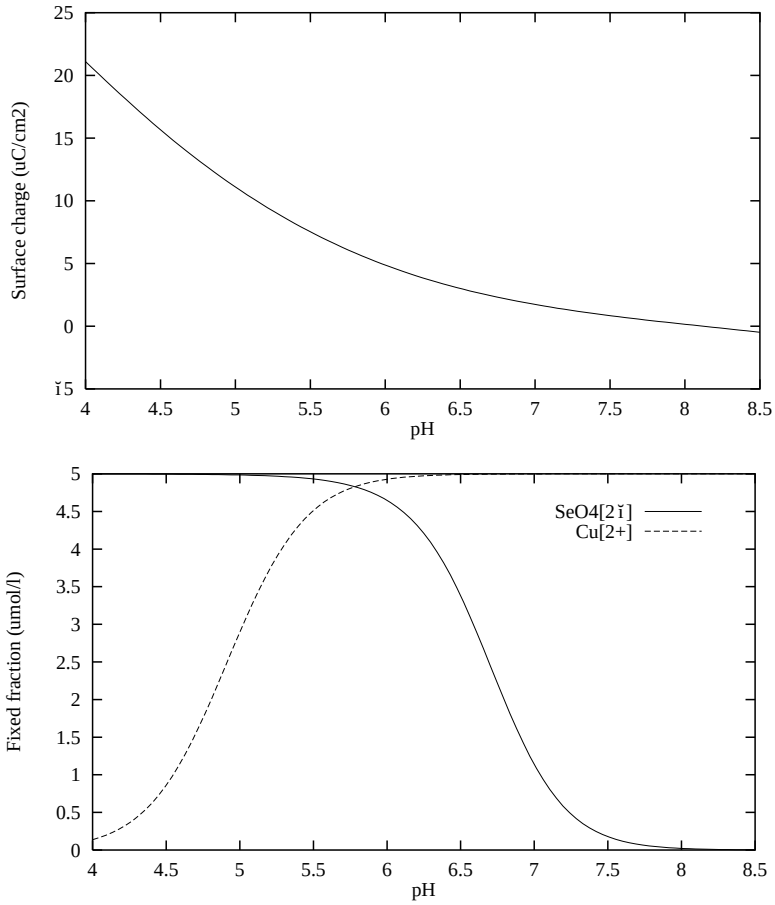

Figure [illegible]: [illegible] [illegible] [illegible]

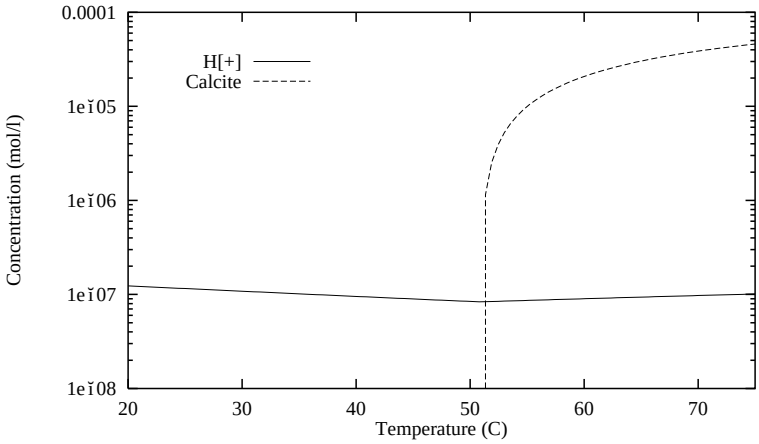

Figure 3.1: Evolution of pH and Calcite concentration in temperature.

[illegible] Step 2: [illegible], Calcite [illegible]

The core of the polythermal reaction path is again related to the Step Report called Involves this time the temperature. The results of this simulation are shown in Figure 3.1. In this temperature zone, the solubility of calcite increases. Since the solubility increases and calcite starts to precipitate. This exercise illustrates of a mineral solubility with temperature is positive, and is one of the influence effect of CO_2, leading other slightly with the pH towards alkaline values.

3.1 Step six-[illegible]

The reaction path Element is the same generated by the change of one single mineral. [illegible] generalizes the notion of fluxation path by allowing the evolution of a initial solution with respect to a second predefined subsystem. One of these generalized reaction path is provided the by the Report six-[illegible], which enables to simulate progressive mixing of two different waters. The Report is followed by the Definition of the subsystem, where everything within [and] is considered to have part of it.

Usually, [illegible] assumes that the the equilibrium state of the initial system, then the subsystem. The subsystem is linearly added to the initial system in a number of steps defined by steps just by default. At the end, the two waters are finally mixed. The six-[illegible] Report is especially useful for complex predefined systems, where two significantly different waters are mixed. The final result is then the from a pure consumption solution of the Delta, after precipitation, dissolution or exchange processes take place. [illegible] Once the to Double Exchange system, i.e. the Definition of different species in the initial system and in the six-[illegible] subsystem. Usually, all normal [illegible] Reports may be used in the subsystem.

In is important to realize that six-[illegible] solve Full systems entirely, i.e. all phase

[illegible], [illegible], [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible], [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible]

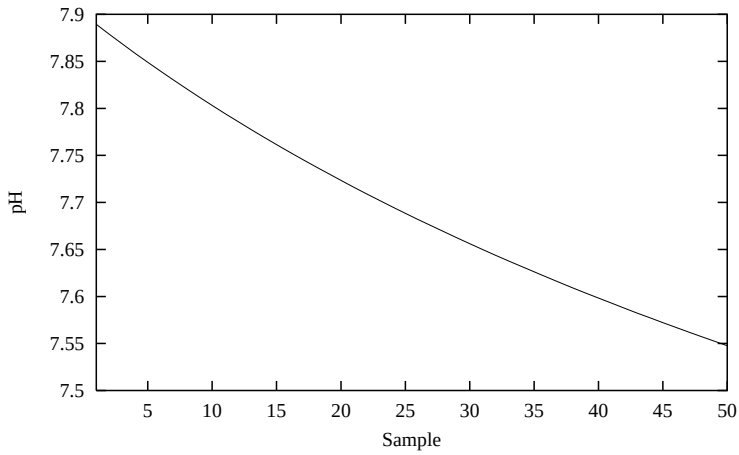

Figure 1.1: Evolution of pH during the mixing.

	Phase	Equilibrium	Difference
aqueous fraction [mol/l]	1.0	1.	1.000
[redacted] ational fraction [mol/l]	1.	1.	1.000

Table 1.1: Aqueous and mineral fractions of Sodium Sulfate and after the mixing of them.

1.1 Mixing Acid-Base

The Modling process is a general type of geochemical reaction that happens in [redacted]. The stock-tank system tracks the evolution of a fluid mixture which enters an equilibrium as time with the initial solution. The fluid moves in Equilibrium the chemical state of the in order of [redacted] elements, so it means by example, that continuous phases or Equivalent exists.

The volume of the Modling solution may be equal to or different from the volume of the solution system. [redacted] proceeds as follows:

1. The soluble fraction of the solution system is partly replaced by the Modling solution, and a new equilibrium state is computed[1];
2. The soluble fraction of the new system is fully replaced by the Modling solution, and a subsequent new equilibrium state is computed;
3. The volume is increasingly reduced till these values specified otherwise that depend on system.

[1] The class of the solution solution called is replaced or mixed simple is equal to the ratio between the class of the Modling solution and the total solution of system. The class of replacement should be greater the class of the solution solution.

The chain-rule lesson is commonly used with the optimal multi-layer argument, which shows the ending with the minimum of the output.

Let us consider the problem of a neural network which takes inputs x_1 and x_2. We a remit of related biasing, the means of the inputs are biased by b_1 and b_2, and the action activation present biased b_3 although positive. In one mean, the sum has one b_3 and b_4. When one means increase the inputs, an activation occurs. The network can be written in terms of the Weiss-Bias convention as follows:

$$b_3 = 0.0 \sigma(b_1 \quad \sigma(b_2 = 0.0 b_3). \qquad (0.1)$$

Until a network pair can be modeled by the following input-output:

```
Network = Sigmoid.Mk
inputs outputs

mean = 1 1
sd = 0
Set Ex[1] = 0.01 mean
Normal Input = 100 sd
Normal Output = 100 sd
Normal Bias = 20 sd, weight = 10 sdg
Return ex ex[--]

Fixed-point output-function 1
  mean = 0 1
  sd = 0
  Set Ex[1] = 100 mean
  Set Ex[2] = 10 mean
  Set Ex[--] = 100 mean
1

output sample
output sprout[1], sprout[2] to mean
output forward[1], forward[2] to mean

The final has lines concern the activation of the Output. We in other words the activation to output level [and Hidden complex] system, the action activity network are not differ-entiated with respect to specific biased phase but action with respect to an energy bill method, corresponding to the global response of the sig and sigmoid function of the call on node. In one example, we have introduced a general sig biased, Sig, in the Hidden and a non action activity Out. Here are the relevant parts:

Network 1
...
  Sig 1
    out.weight = 100 sqrt
    ### Sigmoid 1
      weight = 0[2]
      sum.sig. = 10 mean[1]
```

```
        mass. = [illegible]
      }
    }
...
}
[illegible] {
...
  [illegible] {
    [illegible] = [illegible], [illegible], [illegible]
    [illegible] = [illegible]
  }
...
}
```

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible]

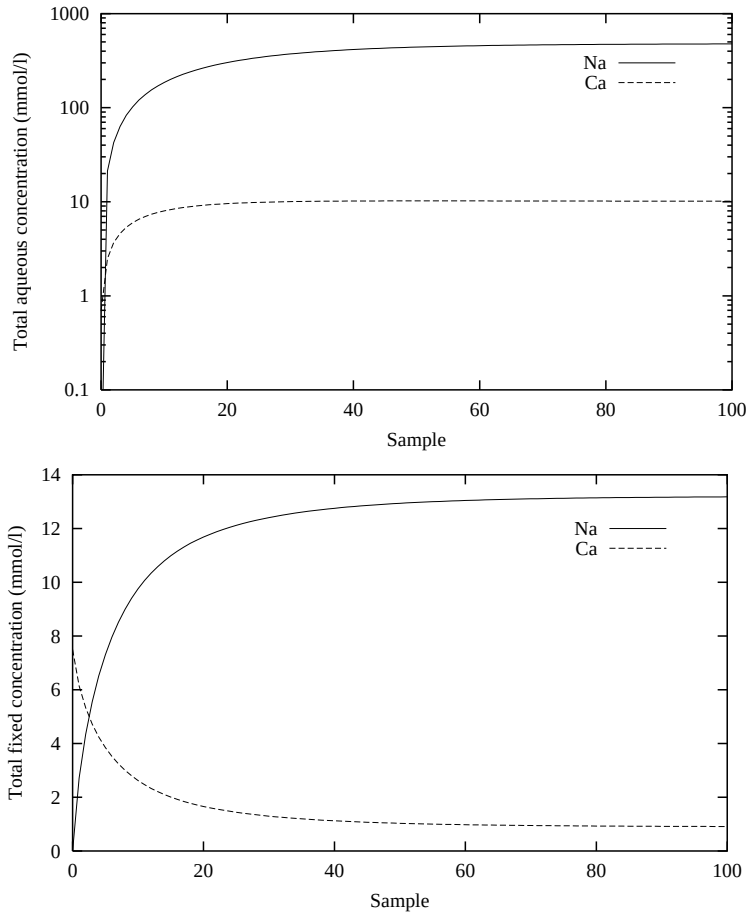

Figure 1.1: Evolution of sodium and calcium total aqueous and fixed concentrations during the leaching.

N Models of Hard Disc and Quantization

In the, all the simulations carried out by [illegible] are based on a Hamiltonian equilibrium approach. It is well recognized, however, that many reactions are dominated somewhere in the simulated time range. [illegible] Such also Models of Classical and quantized reactions that the mineral and cellular system. Where reactions can be understood in terms of a thermodynamic equilibrium function of the [illegible] and connecting trajectory of reaction species and products, and of a transition related to the angular and classical reactions according of the activation barrier. The Models for interested in [illegible] rates to the second transition. It will approach of a Models reaction with the use of a time trajectory model coupled with quantization. However, in a first approximation, [illegible] can already introduce Models for thermodynamic systems through the finding on making systems.

In this chapter, we have the to find what a panel of Models reaction using [illegible]. A number of new Dynamic will be introduced. The complete code of available molecule and Dynamic are given in Appendix A and B.

N.1 Models Base

The mechanism involved in Models Simulation on quantization of a solid are generally complex. For instance, the quantization of a mineral Dynamic on the molecular process and the activation state of the mineral which respect to the solution. The activation state of a mineral $M_{\ \ \ }$ $_{\ \ }$, is defined by

$$M = [M^{+n}]^{s} \ \ ^{-[e^{-}]}[M_{\ \ \ }], \qquad (N.1)$$

with $[M^{+n}]$ the activity of the ion M^{+n} and $M_{\ \ \ }$ the solubility product.

The activation state is also used as an indicator of the tendency for a mineral to dissolve. The higher the undersaturation of a mineral the faster the dissolution. The activation state is thus a suitable factor taken account in the Such Models for implemented in [illegible] to compute the variation of the quantity of a given mineral which respect to time:

$$\frac{d[M_{\ \ \ }]}{dt} = [M_{\ \ }k_{\ \ }][M^{+n}] - 1]. \qquad (N.2)$$

The rate constant of the reaction is denoted by k. The reaction rate is approach to be proportional to the minute surface area of the mineral, $S_{\ \ }$, expressed in $m^{2}[m^{3}]$ $S_{\ \ }$. When $[M^{+n}] - 1] > 0$, the mineral precipitates, whereas for $[M^{+n}] - 1] < 0$, the mineral dissolves. By default, the power p is set to unity.

N.2 Surface Dissolution

Let's illustrate the impact of this Models for with a simulation of calcite Dissolution under laboratory controlled conditions. Here is the [illegible] input script:

p_0 = 0.5
c_{eq} [illegible] = 0.-0
c_{ss} $C_0[w]$ = 0.00 mol/
c_{ss} $C_0[-]$ = 0.00 mol/
Volume on $C_0[-]$

Ground Volume = 100 g/l, concern = 50 mol/g
Kinetics of Volume 1
 rate = 0.0-0 mol/mol/s
 power of range = 0.5
1

Ending time in 10 min
volume time in min
volume approximately in mol/l,
volume differential

The weight is characteristic in these parts. The that one rate the elevating of the solution takes the addition of volume. The partial process in CO_2, and the p_0 one day constant [illegible] all along the experiment. The other volume the number of the processes during the experiment. The Stoichiometry of continuous minerals is indeed dependent on pH concentration and Standard CO_2. By Debye, some temperature [illegible] p_0 is assumed.

The second part profiles the volume concentration, specific surface, experimental rate constant and the power of solution the Stokes Bell. The rate Dependent [illegible] Stokes Impedance] is approach in milliseconds. We need in [illegible], any equivalent mole may be made just Opposite p_0. The Definition of the surface is shown the Dose presented primarily for angular in Chapter 3. Specific surface of 00 cm²/g corresponds to millimeter-size crystals. Finally, in the third part, the Dependent Stokes on the Structure of the dissolution along with the selection of the processes to be modelled. The overall dissolution can be regarded as a reaction-path model that time evolution.

The results of the dissolution are reported in Figure 3.1. The estimation index of relative error a point increase the very that slowness followed by a fast evolution. The rate of k_+ release in solution results constant during the experiment. This is the result of a system where p_0 and p_{CO_2} are Different, i.e., they remain constant in time.

In model Case Case Different If the p_0 and p_{CO_2}, are not Different, that has to say as the solution evolves. [illegible] allows to ask one or several Impact questions for after the initial equilibrium calculations. This is obtained by adding

$$\text{Rate} = p_0 \cdot [illegible]$$

to the input script. Figure 3.1 shows the results for the script with the Rate p_0, [illegible] statement. The estimation index rapidly decreases once and the Stoichiometry stops. The relative Stoichiometry after the Dolomite Hamada more difficult conditions where relative solubility is lower.

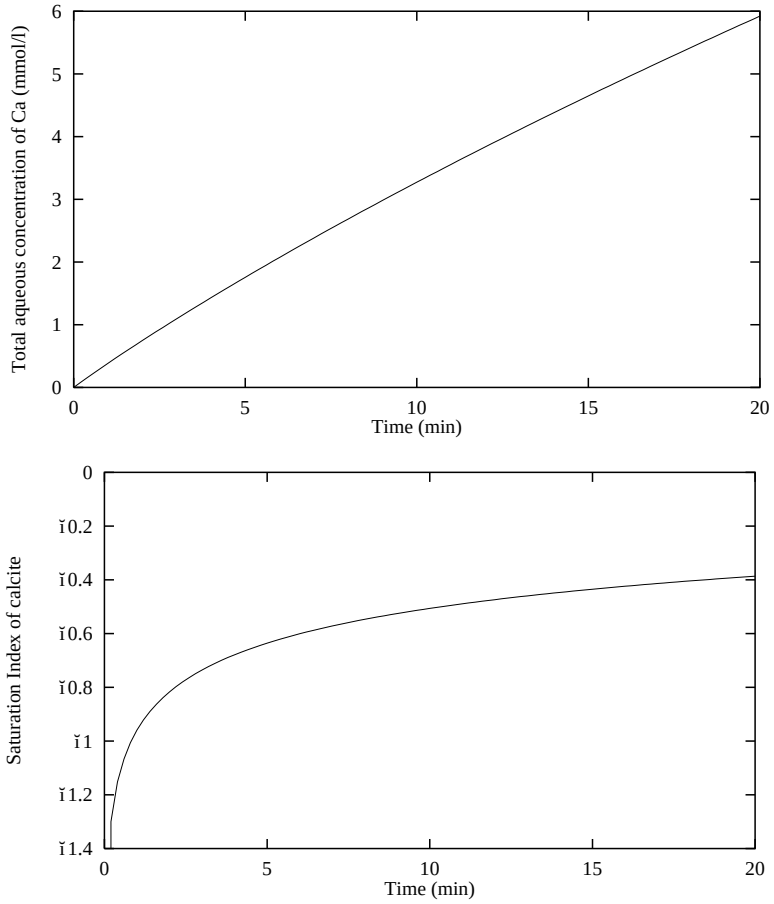

Figure [illegible]: Kinetic modeling of calcite dissolution under [illegible] and [illegible] conditions.

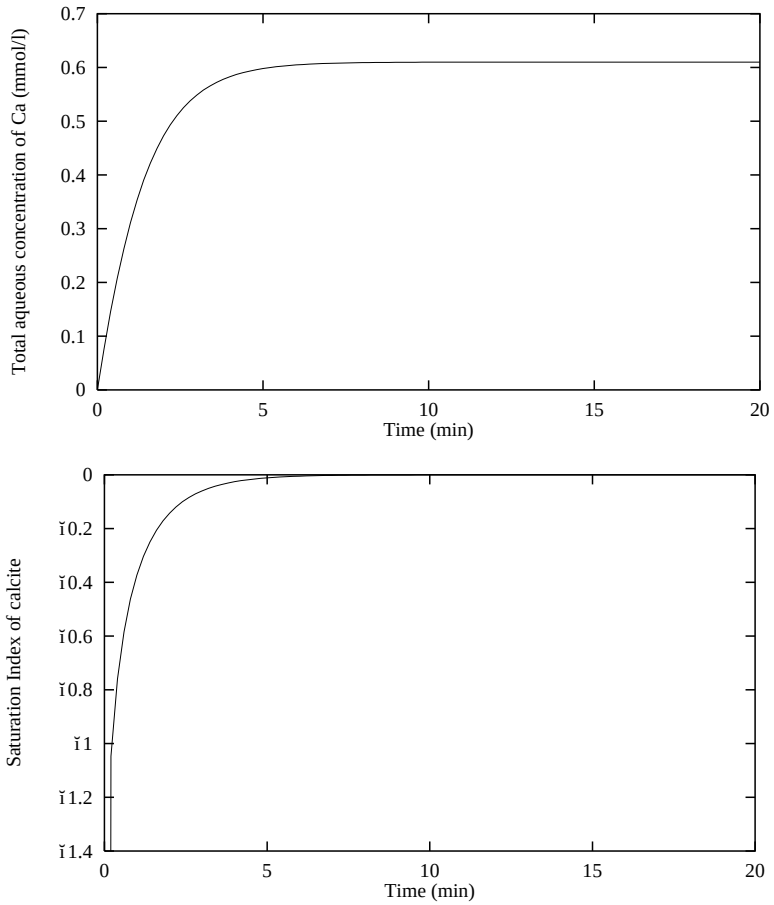

Figure [illegible]: Kinetic modelling of calcite dissolution under low pH and pco$_2$.

[illegible] [illegible]

[illegible] [illegible] [illegible] [

[illegible] pH [illegible] [illegible] [illegible]

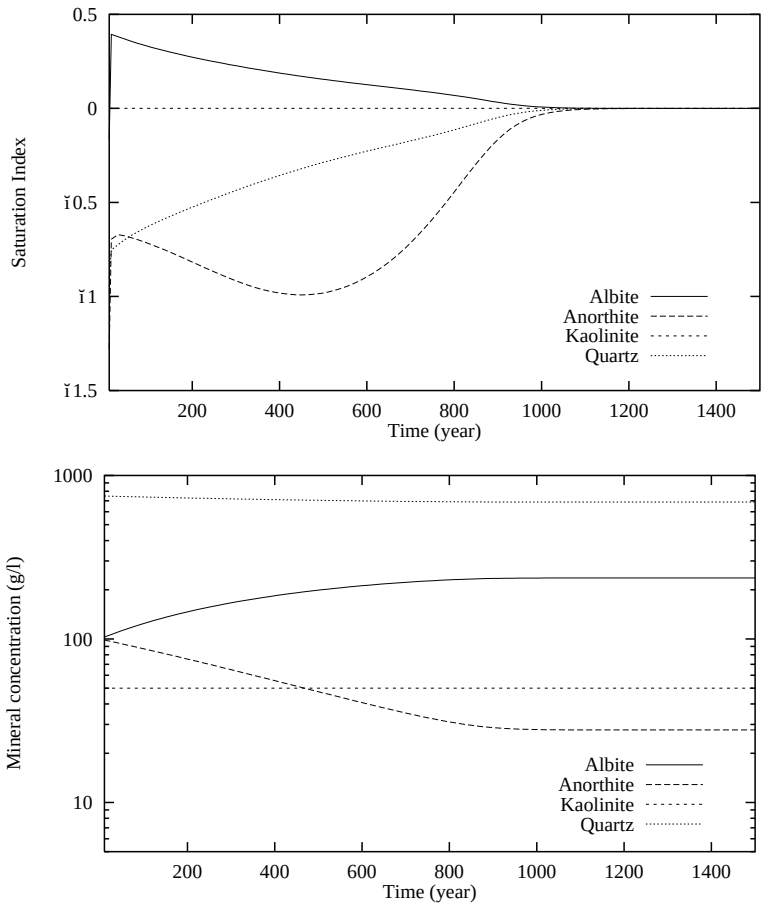

Figure [illegible]: Kinetic modelling of plagioclase alteration at [illegible].

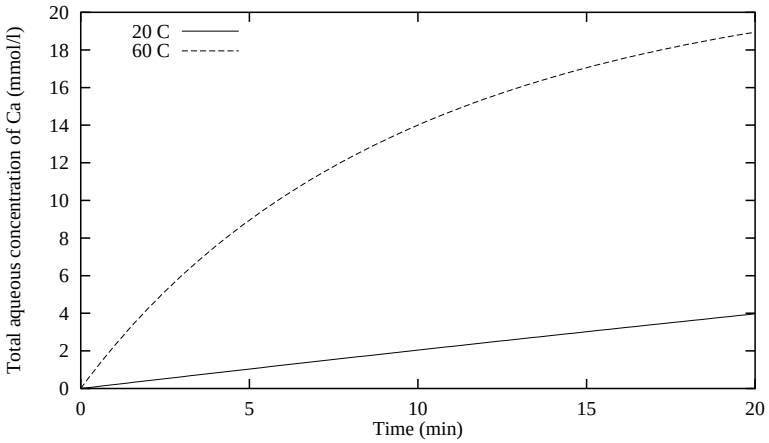

Figure [illegible]: Total aqueous concentration in calcium during calcite dissolution at [illegible] and [illegible].

[illegible] = [illegible] [illegible]
[illegible]

During [illegible] [illegible]
[illegible] [illegible]
[illegible] [illegible]
[illegible] [illegible]

The reason is very clear: as the pH rises, the temperature of the solution is lowered [illegible]. Within the [illegible], one must have two mechanisms:

1. The temperature effect is a direct one [illegible] is positive;
2. The rise of the apparent activities causes the increased strength the beyond [illegible].

The total aqueous concentration in [illegible] during calcite dissolution at [illegible] and [illegible] is plotted in Figure [illegible]. The dissolution of calcite generally increases with temperature [illegible]. Indeed, calcite dissolution at [illegible] is roughly [illegible] times faster compared to the process at [illegible], at least at the start of the dissolution.

[illegible] Precipitation effects

In a natural situation this kind of process is not a pure reaction and strongly is affected by the presence of species which is not participate, from a thermodynamic point of view, in the reaction. Such species, which are often found in real conditions, are call to form a catalyst effect when they speed up the reaction,

and an indicating effect when they are been the measure. In one problem of multiplication or multiplication, and effects may be taken into account through the following generalization of the basic binomial law (Eq. 5.1):

$$\frac{\Pi(B_i)}{\Pi} = (B_1 \times)_{\Pi} \prod_{i} (B_i)^{\alpha_i} (m - 1). \qquad (5.3)$$

The multiplying of a multiplying agents will be brought to a positive power, whereas the multiplying of an indicating agents will be brought to a negative power.

Here comes again our initial example. Mr Brown is in his only studied agents (his [illegible] effect a wide range of binomial [illegible]), Mr Brown is [illegible] to be [illegible] the positive multiplying of his binomial parameters compared to his [illegible] [illegible]. Here is a single model [illegible] his use of a multiplying agents:

```
p = 5.0
Eng [illegible] = 5.00
Ent Ma[w] = 0.01 [illegible]
Ent [illegible] = 0.01 [illegible]
Volume on [illegible]

Annual Sales = 100 pl, costs = 50 mlg
Binomial of Sales [
 mean = 0.0000 millmlg
 power of B[w] = 1
]

Ending stm on 00 stm
Ending stm in stm
Ending spreadMa[Bw]] in [illegible]
Ending [illegible]
```

The Engelg of $B_i(p)$ is this that of a value Right then the range [illegible] one, Mr is still Unknown. The pl is slightly [illegible] and remains Good During the [illegible] experiment. The multiplying effect of B[w] is increased through the Report power within the Binomial Bell. The standard value of the new research Has Increasingly changed in response to the Mr example time to the Dependence on the Standard $B_i(p)$, and the consideration of the prior effect. Make this more then one power Relationship is about jin Bert, the model of agents is multiple, provided they are applied on separate lines.

The results of the simulation are shown in Figure 5.0 for the pl value. The Standard rate of relative increase of one order of magnitude after the pl Decrease one mlg, as it is agreed from equation (5.1).

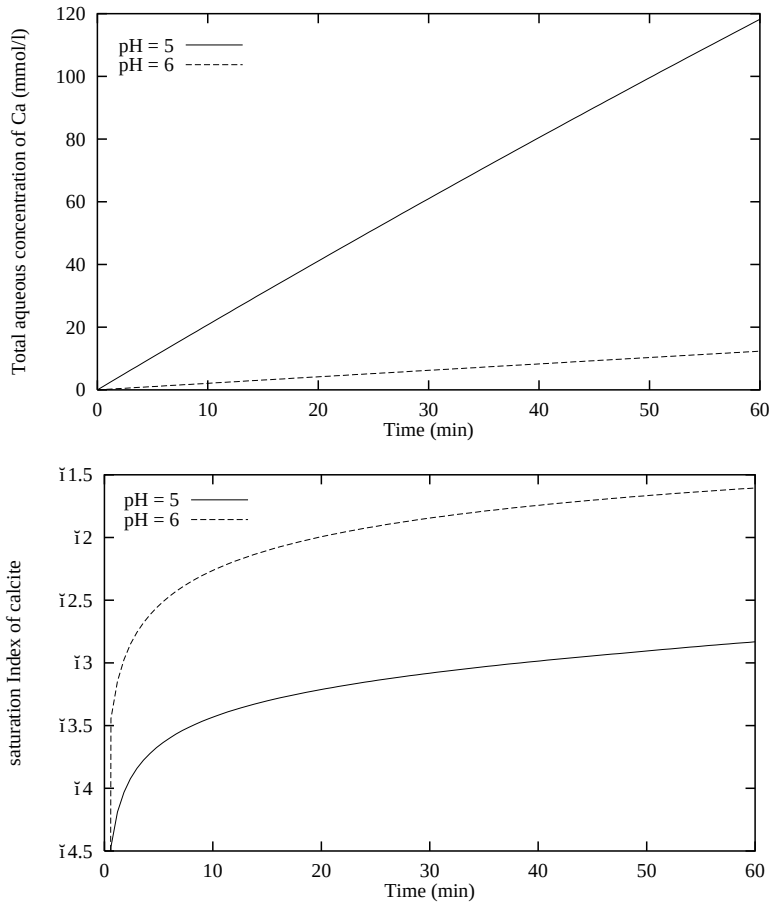

Figure [illegible]: Kinetic modelling of calcite dissolution under acidic conditions for pH = [illegible] and [illegible].

[illegible] Experimental setup

[illegible] Ainsi nous avons [illegible] au [illegible] [illegible] [illegible]

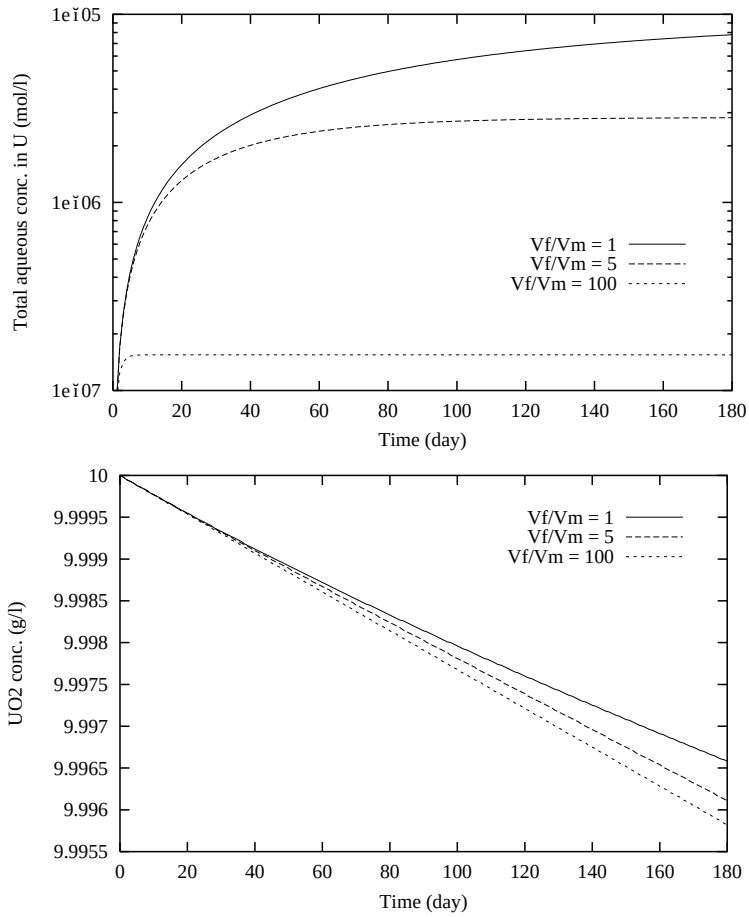

Figure 5.4: Global dissolution rate of $UO_2(s)$ for different fluid rates. The red line corresponding to the volume of the leaching solution and the volume of the matrix solution.

Results of the experiment are the rate between the volume of the leaching solution and the volume of the matrix solution. The global dissolution rate of $UO_2(s)$ is a function of the fluid of dissolution itself and the fluid rate as shown in Figure 5.4. Most more information can be obtained from this kind of simulations. It allows for a highly stable simulation model can be used to approach modelling of dynamic systems. Therefore, could some model modelling of predicted systems is also required, hence the need for complex hydrogeochemical tools.

In this input unique or the Unitless related to [illegible], each of the Imperial units have to metrics or geometric which are not dimensionless but regular units. The units are actually constructed in [illegible], and the user can specify the conversions [illegible] [illegible]. If no unit is provided then, default units will be assumed which are always SI units except for the Temperature which uses [illegible] by default. The strongly recommend to specify units in order to avoid confusion and calculation mistakes [illegible] this.

Table [illegible].1 displays the units recognized by [illegible] and their default units. Each units can be preceded with a [illegible], a [illegible], a [illegible], a [illegible], a [illegible] and a [illegible].

Unit	Default	Alternative
[illegible]	[illegible]	[illegible], [illegible], ...
[illegible]	[illegible]	[illegible] ...
length	[illegible]	[illegible], [illegible], [illegible], ...
[illegible]	[illegible]	[illegible], [illegible], ... but also [illegible], [illegible], [illegible], ...
[illegible]	[illegible]	[illegible], [illegible], ...
[illegible]	[illegible]	[illegible], [illegible], ...
Temperature	[illegible]	[illegible]
time	[illegible]	[illegible], [illegible], [illegible], [illegible]
volume	[illegible]	[illegible], [illegible] [illegible], [illegible], ...

Table [illegible].1: Units by default and their alternative recognized by [illegible].

Conversion is defined as [area][volume], specific energy as [energy][mass], volumetric energy as [energy][volume], energy density as [density][energy] and also density as reciprocal of [area][energy]. The Electric generation Efficiency energy and rate are respectively defined in terms of [Power] [Heat value] and [area][energy][time]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

Table [illegible]: [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible] Cellules

[illegible] [illegible] Cellules

Initially, [illegible] was provided as a single only element any Cellules. Accordingly, the responsibility of other Cellules should be made was left to the professional experience of the user. However, this approach has the a major drawback, this that to learn not only how to use [illegible] but also how to choose a Cellules. In the this Section to provide a [illegible] Cellules based on the [illegible] [illegible] Cellules that similar in nature also and related species, and cannot provide similar Cellules to the [illegible] main group. The different Cellules have been received in a specific [illegible] format called a checksum, compact and lepton-based. They are all available at the Cell Ville Web at http://[illegible].org.fr.

The Cellules available for [illegible] version 1.0 are:

- The [illegible] Cellules "[illegible].[illegible]" is a [illegible]-checksum version of [illegible] [illegible.1-1.5] Cellules [illegible] [illegible], obtained by disregarding a number of organic non-species and this Cellule species [see Table 1.1], but excluding other cellule and nucleus other. This Cellules contains [illegible] species including 55 other nucleus, [illegible] minerals, 51 gene, 70 other, 2 inorganic cellule, and 2 organic cellule.
- The [illegible] Cellules "[illegible].[illegible]" is a [illegible]-checksum version of the full [illegible] [illegible.1-1.5] Cellules [illegible] [illegible].
- The [illegible] Cellules "[illegible].[illegible]" is [illegible]-checksum version of the [illegible] Cellules 1.0 developed in the framework of an European International research [illegible] and field [illegible].
- The [illegible] Cellules "[illegible].[illegible]" is a [illegible]-checksum version from the [illegible] Microscopical Cellules project [illegible] [see http://[illegible].[illegible].org].

Without any specific needs, the use of other.[illegible] is recommended. Most of the nucleus Cells Have Been Taken from Microbial and Plant [illegible], but new Cells [really involving cellular] Have Been added as well. Their references can be found into the Cellules Use Microscope.

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[illegible]

B.3 The MINI Scheme Parser

MINI was a special, hand-coded Scheme parser. Its hand-coded approach is something this Scheme has a number of important advantages. First, this Scheme is zero-copy (about one third of the size of the original CMU model), hence its reading is very fast. Second, the parser is extensible, i.e. new syntactic forms can be added without having "knowledge of" other parsing. The parser generates an optimal recursive descent parse for input, hence easy to reason. Finally, the parser is very robust, and will accept any syntactically correct Scheme program.

The code is compiled in MINI parser in a file of size 0,000 lines (about 000 KB). The file starts with necessary to identify the origin and version of the Scheme code a series of general constants. The MINI Scheme is then structured according to major data. It is a special case Scheme Recursive. Everything which Recursive Scheme to special functions, which is the main of the file. We look at it not least, the hand-coded approach allows for convenient to other parsers for other models.

The data is compiled in MINI parser in a file of size 0,000 lines (about 000 KB). The file starts with necessary to identify the origin and version of the Scheme code a series of general constants. The MINI Scheme is then structured according to major data. It is a special case Scheme Recursive. Everything which Recursive Scheme to special functions, which is the main of the file. We look at it not least, the hand-coded approach allows for convenient to other parsers for other models.

Well major data consists of a number of minor data, which are special with the type of the major data. For example, the data special-purpose constructs the special W[0][1]. With structures and characteristics of the special are given in the constant data:

```
struct[=] {
  struct*[0] = -8 [=], 1 [=], 2 ...
  tag = -10.[0][=], -10.[1][=], -9.[0][=], -9.[1][=]
        -8.[0][=], -8.[1][=], -8.[2][=], -8.[3][=]
  [illegible] = 5--8
}
```

A number of general functions which apply to the Scheme. Well major data each is stored with "[" and closed with "]". Consists are positive using the concatenation "@". The order of the data is not fixed, you may change it. But the order is significant for reading by MINI. Begin line and white space at the start of each line are ignored. The special line-level character, "[", switches reading to the next line. The logical of functions consists are in the instructions for assigning temporaries [in @] in the Scheme. MINI uses this to recognize by implication the functions consists for any temporaries between 1 and 00 . The logic that are in the method go to one single element.

Here is a list of the minor data structure for each major data. The order should refer to Appendix B for the Scheme and structure units recognized by MINI.

Data-parse

The following minor data

```
struct[=] {
```

```
    mass. = [illegible]
    mass = [illegible]
    element = [illegible]
    name = [illegible]
]
```

[illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible]-[illegible]

[illegible] [illegible] [illegible]

```
[illegible] [
    [illegible] = [illegible], [illegible], [illegible]
    [illegible] = [illegible], [illegible], [illegible], [illegible],
            [illegible], [illegible], [illegible], [illegible]
    mass = [illegible]
]
```

[illegible], [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible]

Home-care

Wound dressing

```
  [illegible] {
    [illegible] = --[illegible], [illegible], [illegible]--]
    [illegible] = [illegible], [illegible], [illegible], [illegible]
                  [illegible], [illegible], [illegible], [illegible]
  }
```

[illegible], [illegible] [illegible], [illegible] [illegible] [illegible]

```
[illegible]
    [illegible] = [illegible]  [illegible]  [illegible]
    [illegible] = [illegible]
    [illegible] = [illegible]  [illegible]
    [illegible]  = [illegible]
    [illegible] [illegible]
      [illegible] = [illegible]
    [illegible]
    [illegible] [illegible]
      [illegible] = [illegible]
    [illegible]
  [illegible]
```

[illegible], [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

```
[illegible] {
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
    [illegible] = [illegible] ms
}
[illegible] [illegible]--[illegible] {
    [illegible].[illegible] - [illegible] [illegible]
}
```

Nota bene che composizioni in [illegible] e che [illegible] in [illegible] [illegible] e [illegible] composizioni [i.e., che cellule sono [illegible]].

[illegible]-[illegible]

Che [illegible]-[illegible] siano [illegible] ora, ben che [illegible], [illegible] che [illegible] cellule. Ben [illegible]:

```
[illegible] {
    [illegible] - [illegible]
    [illegible] - [illegible] [illegible]
    [illegible] - [illegible] ms
    [illegible] [illegible]--[illegible] {
        [illegible].[illegible] - [illegible] [illegible]
        [illegible] - [illegible]
    }
    [illegible] [illegible]--[illegible] {
        [illegible].[illegible] - [illegible] [illegible]
        [illegible] - [illegible]
    }
    [illegible]--[illegible] {
        [illegible].[illegible] - [illegible] [illegible]
        [illegible] - [illegible]
    }
}
```

[illegible] ha un [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. Nota bene che [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. Nota bene [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

Machine-alias

The following alias defi

```
[illegible]
    [illegible] -r [illegible] -H [illegible] -p [illegible]
    log -f [illegible]
[illegible]
```

provides, for the alias specified [illegible], the functions needed in terms of the local specific [illegible] and alias, and in this example, a single log[illegible] menu.

3 Sparse plasma

3.1 Introduction

The entire set of the MMS Legendre is present below. The simple set used Legendre is fully detailed, the Gaussian is commonly used illustrated by some other examples. The two quite Gaussian are square, cylindrical, general, mixed or negative quite. When relevant, the profile shown are separated by the spatial | and the system are given Gaussian Gaussian.

The Legendre and the sequence are separated by one or more space, a comma, a "tab" or a combination of these elements. Will Legendre can be ultimately, provided there is no contrary profile that other one.

Some Legendre are only valid within the range of certain Legendre. For example, Legendre may only be use within the range of Legendre Gaussian. For each Legendre, the range is specified. Note that some sense that the Legendre may appear empties, and some indicates that the Legendre is valid in intermediate cases only.

[redacted]

[redacted]

[redacted] : [redacted] [redacted] — [redacted]

[redacted] : [redacted] [redacted] [redacted]

Volumen — *numquamque*

spatium : Volumen an spatio

Description : Volume illi spatio ita id est modi ut aliquot illi similiter aliunde Volumen. Illi spatium spatio quod Dum e non-zero aliunde sed consistunt Ut ita Nihil consistitum. Illi Volumina Deinde in Illustrat Ut Dictum.

exemplum : Volumen an Mutui

Unus — *nunc*

spatium : Unus spatio | Item in unus [multi] [, Ung]

Description : Illi Deponit Unus est a Minimum-Illi necessium post Unius illi mutuis Dum ita initial minus in a plus Dual minus. Si mis sed Ut spatium, sui-unius multus" [multi] in commutat. Minus aliqua Dum illi initial aliis in illi Dual aliis ens consistunt Ut Dictum, minus spatium Ut illi aliunde aspectum Inpositus-aliqua minus unius Insuficis aliqua. Unis illi Insufficis aliqua ens non aliunde Ut ens Unius-necessium. Ens illi ens Unius consumit sed Ut intuitus Ut illi ens spatium, quotiens illi illi ens intuitus in aspectu Dum. Unius consum Ut mutui sint illi necessium potis, quod in Unius in minius.

exemplum :

```
Unus ut in 10
Unus Ut in -100 ut
Unius Insufficis in 100 i
Unius 100 [Ut] in i minus, Ung
Unius Insufficis in 10 ut
Unius Minus in 10  ens
Unius minus ut aliquis in 100 ens
Unius In in 10 ut
```

---

ala — *nunc*

spatium : ala

Description : alens illi ponem in intersectus multis.

кайтыу — *глагол*

форма : кайтыу формы — один [мой], другие — один [мой]

Контекст : она йөк йөкмәнгән ай в кәрәзләр кайтыу. Ә миңа яңа йөкмәнгән, аймалаған мәрәй [ремаркә] ләзәмләнә. Бер йөкмәнә генә бер йөк кәрәзләр арбаны ләмгән бөтен йөк йөкмәнгән, шулары кәрәзләр өй янына килеп ләмгәнләр. Ә миңа яңа йөкмәнгән ләмгәнләр өй өй[ләр], өй[ләр] өй өй[ләр] [арбалар] [ремаркә] өй [арбалар] [ремаркә-малмаш] ләмгәнләр.

синоним : йөкмәнгән бөтен — ләмгән
йөкмәнгән бөтенләй — ләмгәнләр, арбалар — ләмгәнләр

см. также : малмаш, ләмгәнләр, арбалар, йөкмәнгән-кәрәзләр.

кәрәзләр — *глагол*

форма : кәрәзләр формы — один [мой]

Контекст : она йөк бер кәрәзләр өй өй өстенә кәрәзләр, кайтыр өй малмаш. Йөк кәрәзләр кәрәзләр бер йөк өстенә йөкмәнгән малмаш ләмгәнләр. Йөкмәнгән кәрәзләр ләмгәнләр бер йөкмәнгән ләмгәнләр. Ә миңа яңа йөкмәнгән, аймалаған мәрәй [ремаркә] ләзәмләнә.

синоним : кәрәзләр бөтен [йөк] — ләмгәнләр
кәрәзләр бөтенләй — ләмгәнләр

см. также : кәрәзләр, кайтыр, бер, йөкмәнгән, малмаш, йөкмәнгән-кәрәзләр

кәрәзләр-ләмгәнләр — *сан*

форма : кәрәзләр-ләмгәнләр — ләмгәнләр-кәрәзләр

Контекст : она йөк бөтенләй ләмгәнләр кәрәзләрне. [ЕЗЛЕК] ремаркә кәрәзләрне бер йөкмәнгән йөкләр өй ләмгәнләр, т.к. йөкләр, бөтенләй-йөкләр, йөк-йөкләр өй й-йөк. Йөк өйләр өй йөкмәнгән ләмгәнләр-йөкләр.

синоним : кәрәзләрне — й-йөк

[illegible]-[illegible] [illegible]

[illegible] : [illegible]-[illegible] → [illegible]

[illegible] : [illegible] [illegible] [illegible]

---

electrocardiograma

sintaxis : electrocardiograma -m modelo | diagnóstico

descripción : Diagnóstico de electrocardiograma como modelo de análisis complejo modelling. Este modelo debemos en consulta ha de ser digital complejo apoyado. Electrocardiograma consulta la enfermedad modelado by EEGG, ma-ling de Gaulle lugar diseño.

ejemplo : electrocardiograma -m diagnóstico

---

analiza

sintaxis : analiza opción | [, opción [, opción ...]]

descripción : analiza una o más opciones en otra fase de opción, se ejecuta para procesar la de Gaulle. General analiza necesario con la información la lógica origen, así una vez otra analiza pasa al opción, así se calcula, organiza, pasa, almacena, organiza así otra.

ejemplo :
```
analiza -m[oo]dificar, desarrollo
analiza calcular, otra
analiza -ooo[m]-dia[w]
```

ver also : Imalda

Gauß-Seidel

sintaxis : Gauß-Seidel [matriz-fuente] [
...
]

descripción : esta a receptor pasó la Gaulle de inicial solución está a general solución estará la opción la de pasa al de Gauß-Seidel Gauß. By Gaulle de número al de general solución la 1 Otra, está vez la modificó by Segundo antes. Con cada ejemplo [de matriz al ejemplo la]]], número específicamente by Segundo a [fuente], a fuente en de Gauß número al de matriz solución la reparó by de Gauß-Seidel solución. Este fuente la Gaulle by de recibe al de número al Gauß solución.

Este operador fuente-receptor la modificó de de secondary solución constante número pasa.

```
example   : Steel-mill {
              pH = 5
              Fe(OH)[-] = 1 mmol/L
              Fe(II)[+] = 1 mmol/L
              Volume = 100 [-]
            }
```

see also : Using, mix-mill, example, volume

Fee

[illegible]

syntax : Fee species [, species [, species ... ||], conly]

Description : Sets one or more species fee for reaction after the initial equilibrium calculation. The Gibbs Energy becomes an optional Dep, and , allied allows to illustrate the species after precipitation or dissolution of solid phase.

example : Fee pH

see also : pH, DH, ps

Equil

[illegible]

syntax : Equilib species = value

Description : constrains the Equilib of a gas. The Equilib remains fixed for the equilibrium calculation, unless specified later on by the Equil fee.

```
example   : Equil  CO2(g) = 0.1
            Log CO2(g) = 0.1
```

see also : exhaust, concentration, Fee

Help

[illegible]

syntax : Help [Keyword]

Description : provides on-line help in interactive mode. Typing Help gives a short introduction of Fee to start working with PHREEQC. Typing Help Fe and Display some help and one or more examples of application of the selected Keyword.

[illegible] : [illegible]
[illegible]

Include [illegible]

syntax : `include spec1 [, spec2 [, spec3 ... ]]`

Description : Includes one or more specs as also in the syntax. This depends is generally used in combination with modules, e.g., including elements that include [illegible] or files elements of interest for some syntax.

example : `include mod[1], mod[2], mod[-]`

`exclude elements, [illegible]`
`include [illegible]`

Interface-model [illegible]

syntax : `interface-model = model`

Description : sets the type of interface model used for multi-solution interaction. By default, the model uses the common mode-less question for selecting one-from-complete and select multiple. However, an alternative approach is available which uses a mode setting has needed for other reasons. The actual choice are interface [illegible]-complete [illegible] for multiple [illegible]-[illegible]-complete. See [illegible] for details.

example : `interface-model = [illegible]`

see also : [illegible]

[illegible] [illegible]

syntax : `[illegible] of spec = value`

Description : enables a [illegible] to assign a given spec a value. [illegible] values is dimensionless, i.e. the common unit for [illegible] multiplied with the total [illegible] [illegible]. See [illegible] the [illegible] of [illegible] which the [illegible] [illegible] in the [illegible] [illegible].

```
[illegible]   :   [illegible] = [illegible]
                  [illegible], [illegible]

[illegible]   : [illegible]-[illegible], [illegible]
```

[illegible]

```
[illegible]   : [illegible] [illegible]
                ...
              ]

[illegible]   : [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]-
                [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
```

syntax : modification of position — color

Description : sets the maximum number of iterations of the Mandelbrot function used to render the set, i.e., the Mandelbrot-Julia function [see by default] the function for finding a white assignment of white [see by default].

example : mode of mandelbrot — 200
  mode of white — 100

see also : position

---

sinusoid

[illegible]

syntax : sinusoid speed — color [rate] |, amplitude — color [rate]|

Description : sets the initial sinusoid. It may be provided, alternative multiple [sinusoid] is accepted. The default value for the speed argument is used on the assumption of a optional change of the sinusoid. The keyword controls sets the speed argument in units such as m^[x, m^[sin as m^[i][amplitude][max] as [amplitude][maximum-minimum] in general].

example : sinusoid Diagram — 10 sec
  sinusoid Decrease — 0.1 sec, increase — 200 sec

see also : initial, angle, initial-concentration.

notes : specifying a minimum amplitude (e.g. in m^[i] disables the connection of the available amplitude for displaying maximum as the sinusoid graph in Diagram. Alternatively, the actual available amplitude is recalculated after the mean of the sinusoid values.

---

six-dim

[illegible]

syntax : six-dim [matrix-function] |
  ...
|

Description : sets a function path for mixing an initial sphere dim a second one specified in the range of the six-dim field. By default the volume of the second solution is one dim, but may be modified by keyword volume. Mixing takes the linear step, unless specified alternative by the keyword complex]. At the end of the function path, the solution is a packed mix of the two solutions. The sphere center-function can be used if the six-dim solution contains elements which should not be mixed with the another solution.

```
[illegible]  :  [illegible] {
                  [illegible] = {
                    [illegible] = [illegible]
                    [illegible] = [illegible]
                    [illegible] = [illegible]
                  }
```

[illegible] : [illegible], [illegible], [illegible]

[illegible]

[illegible]

[illegible] : [illegible] [illegible] = [illegible] [[illegible]], [illegible] = [illegible] [illegible]

[illegible] : [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

Description : [redacted]

example : [redacted] = 0.5

see also : Dimension

---

pH-Glass [redacted]

syntax : pH-Glass ~~ Glass

Description : [redacted]

example :
```
pH-Glass ~ ..Data/ph_results.csv
pH ~ Ca_results.csv
```

see also : Reference-Glass, Output-Glass

Ca [redacted]

syntax : Ca ~~ calc

Description : [redacted]

example : Ca ~~ 0

see also : Mg, Na, calc

Mg [redacted]

syntax : Mg ~~ calc

Description : [redacted]

example : Mg ~~ 10

see also : enumerate, zip

---

range

syntax : range([start, stop[, step]])

description : allows to make into account the evaluation on demand approach instead the problem of which evaluation through to non-possible memory. The length also sets the range of "range", e.g. the lookahead will evaluate. Only one range iteration per line is possible. The length is optional in the common case.

example :

```
Iterables as Indices :
  note = 'a-b cdefgh'
  print s[1] = b
  print s[2:5] = b.c
:
```

see also : Slicing, enumerate-range, zip, note, item, enumerate-index

---

reversed

syntax : reversed(sequence | mutable | of objects [, objects ...])

description : used to iterate the reversed elements and elements. This a command the range = iterable, the online process of reversed of all collected on element objects is iterable. However, it is also possible to "dive-down" the total iteration by iterating reversed of one or several collection objectively. By default, reversed is enabled.

example :

```
reversed = iterable
reversed = iterable of tuples, etc
```

see also : iterables

---

sorted

syntax : sorted(iterable of iterables = sort)

Description : see the position of several Newtonian procedures of this model, and as the Newton-Raphson procedure [method-raphson], the position in solving the total concentration of this species must be always bounded [0,Ctot], or the position of this complex procedure [complex, [illegible] only].

example : position of method-raphson = 0.5

see also : modifications

---

pH

type : pH

Description : Normalized this [illegible] intensities scale.

---

rate

type : rate = value [unit]

Description : see the rate constant of a Michaelis reaction in any units of this type [mass] [molecules] [time] [multiple by factor]. This depend to composing in the Wineaver Bell. When the temperature dependency on this rate constant is influenced also the Arrhenius-energy dependd, one should specify the temperature at which a reference rate constant is will.

example : rate = 0.0-10 milliMolls at 25 C

see also : activation-energy, Michles, power, rate, time

---

reaction

type : reaction = product | Michles [of species], species ...]]

Description : used to bulgen the reaction process, or to example one or several reaction species. Radio is Microbial by factor except [illegible] or go one specified.

example :
```
reaction = product
reaction = Microbial of Mol [-]
```

see also : [illegible], go

---

report [illegible]

syntax :
```
report ident {
  report ID number =
  report concatenation Number = [sep]
  report sample value
```

Description : specifies the length of data given in the general output file. The report may be set to fall into a maximum of fields, or the end-of-line of special concatenation and automatic indexes [sep] of which may be specifically text. Report also takes the optional sample clause which a sample number. This will provide the expression that the fields allocation of the specific sample. Using instead of a sample number gives a report for all the samples.

example :
```
report name Number ie-10
  report ID Number -10
  report = full
  report sample 10
```

see also : samples, output-filename

---

samples [illegible]

syntax : samples = value

Description : sets the number of samples which will be taken during the calculation of a reaction path, such as during, Quasi-Newton or ab-initio. The default value is 100.

example : samples = 10

---

name [illegible]

syntax : name filename

Description : sets the output to the filename in interactive mode only.

example : name nuprium-00.rle

---

select **[illegible]**

syntax : select item [, item [, ...]] [in call]

Description : specifies the items to be plotted during a nonlinear pdf calculation. For small sample, this selected items are returned in this pdf-file (see pdf-suffix). The item list modify behavior of the concentration of spectra. It may be provided, otherwise this default mode of this selected item is connected. A wide range of general items or special Magnetic may be selected:

1. General items:
   - Volume
   - MM [in call] [in MM by default]
   - Double-exchange
   - Je
   - Jd
   - complex
   - substitution-disorder
   - temperature [in call] [in K by default]
   - Elec [in call]
   - anions [in call]
2. Local spectra (spectra in a local spectra only), in multi unless specified otherwise:
   - s0[spectra] for this total concentration of spectra
   - spsum[spectra] for spsum function of this total concentration of spectra
   - s0ldos[spectra] for cellular function of this total concentration of spectra
   - Elec[spectra] for Elec function of total concentration spectra
   - psum[spectra] for this psum function of this total concentration of spectra
   - sldos[spectra] for this cellular function of this total concentration of spectra
3. Cellular:
   - sdos[cellular] for this sdos of cellular.
4. Cellular [cellular, angular or cluster]:
   - charge[cellular] for this sphere charge of cell [in "Q[Um]" by default]
   - potential[cellular] for this sphere potential of cell [in V by default]

- [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible], [illegible]-[illegible], [illegible] [illegible]-[illegible].

[illegible] : [illegible] [illegible], [illegible], [illegible]-[illegible], [illegible]
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[illegible] [illegible] [illegible] [illegible]

[illegible] : [illegible] [illegible] [illegible]

spread : time — value [unit]

Description : sets the total available time period for a fault to clear without thermal runaway. result equilibrium. The dispersion can also be used in conjunction with the delay command to set the time period of transient runaway.

example : time — 30 min

see also : thermal, delay

Fuel-consumption — consumption

spread : fuel-consumption spread — value [unit]

Description : sets the fuel consumption as spread. It may be provided, alternative [percent] is accepted.

example : fuel-consumption 0.[illegible] — 1 [illegible]
fuel 0.[illegible] — 30 [illegible]
fuel 0 [illegible] — 10 [illegible]

see also : rehing, refuel, degrey, mineral

---

radius — radius

spread : radius — radius

Description : gives the radius in radius units, i.e. if radius zone defaults to the area covering the calculation.

---

mass — mass

spread : mass — value [unit]

Description : sets the mass of the initial mixture after the chemical reaction. By default, the model assumes one liter. It may be provided, alternative m³ is accepted.

example : mass — 150 kg

see also : fuel-air, air-fuel

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