

# Package ‘RCarb’

October 14, 2018

**Type** Package

**Title** Dose Rate Modelling of Carbonate-Rich Samples

**Version** 0.1.0

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**Description** Dose rate modelling for carbonate-rich samples in the context of trapped charged dating (e.g., luminescence dating) applications.

**Depends** R (>= 3.3.0), utils

**Imports** interp (>= 1.0), matrixStats (>= 0.50.0)

**Suggests** R.srp (>= 0.42.0)

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**VignetteBuilder** R.srp

**RoxygenNote** 6.1.0

**NeedsCompilation** no

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RCarb-package

*RCarb - Dose Rate Modelling of Carbonate-Rich Samples*

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## Description

The package provides a dose rate modelling for carbonate-rich samples in the context of trapped charged dating (e.g., luminescence dating) applications.

**Package:** RCarb  
**Type:** Package  
**Version:** 0.1.0  
**Date:** 2018-10-03  
**License:** GPL-3

## References

This package bases on a MATLAB programme with name 'Carb', details can be found the following references:

Mauz, B., Hoffmann, D., 2014. What to do when carbonate replaced water: Carb, the model for estimating the dose rate of carbonate-rich samples. *Ancient TL* 32, 24–32.

Nathan, R.P., Mauz, B., 2008. On the dose-rate estimate of carbonate-rich sediments for trapped charge dating. *Radiation Measurements* 43, 14–25. doi:10.1016/j.radmeas.2007.12.012

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Example\_Data

*Example data*

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## Description

Example data

## Format

Example\_Data: [data.frame](#)

## Version

0.1.0

## Examples

```
## show first 5 elements of the METADATA and DATA elements in the terminal
data(Example_Data, envir = environment())
head(Example_Data)
```

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model\_DoseRate

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*Model dose rate evolution in carbonate-rich samples*


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## Description

This function models the dose rate evolution in carbonate enrich environments. For the calculation internal functions are called.

## Usage

```
model_DoseRate(data, length_step = 1L, max_time = 500L, n.MC = 100,
  method_control = list(), txtProgressBar = TRUE, verbose = TRUE,
  plot = TRUE, ...)
```

## Arguments

data	<b>data.frame (required)</b> : input data following the structure given in the example data set data(Example_Data). The input <b>data.frame</b> should have at least one row (i.e. values for one sample). For multiple rows the function is automatically re-called.
length_step	<b>numeric</b> (with default): step length used for the calculation
max_time	<b>numeric</b> (with default): maximum temporal search range
n.MC	<b>numeric</b> (with default): number of Monte Carlo runs used for the error calculation
method_control	<i>(optional)</i> : additional arguments that can be provided to the control the the modelling. See details for further information.
txtProgressBar	<b>logical</b> (with default): enables/disables the txtProgressBar for the MC runs
verbose	<b>logical</b> (with default): enables/disables verbose mode
plot	<b>logical</b> (with default): enables/disables plot output
...	further arguments passed to the underlying plot functions, see also details for further information. Supported standard arguments are mfrow, xlim, xlab.

## Details

TODO

## Value

The function returns numerical and graphical output

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[ NUMERICAL OUTPUT ]

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- A **data.frame** which is the combination of the input and values calculated by this function.

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[ GRAPHICAL OUTPUT ]

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- Two plots are returned: ##TODO

**Function version**

0.1.0

**Author(s)**

Sebastian Kreutzer, IRAMAT-CRP2A, UMR 5060, Université Bordeaux Montagne (France); based on MATLAB code given in Carb\_2007a

**References**

Mauz, B., Hoffmann, D., 2014. What to do when carbonate replaced water: Carb, the model for estimating the dose rate of carbonate-rich samples. *Ancient TL* 32, 24–32.

Nathan, R.P., Mauz, B., 2008. On the dose-rate estimate of carbonate-rich sediments for trapped charge dating. *Radiation Measurements* 43, 14–25. doi:10.1016/j.radmeas.2007.12.012

**Examples**

```
##load example data
data("Example_Data", envir = environment())

##run the function for the first sample
model_DoseRate(
  data = Example_Data[1,],
  n.MC = 2,
  txtProgressBar = FALSE
)
```

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Reference\_Data*Reference data*

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**Description**

Reference data

**Format**ref: [data.frame](#)**Version**

0.1.0

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write_InputTemplate	<i>Write table input template</i>
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**Description**

This function creates a template table that can be used as input for the function [model\\_DoseRate](#)

**Usage**

```
write_InputTemplate(file = NULL, ...)
```

**Arguments**

`file` [character](#) (optional): output path, if NULL nothing is written, but a template [data.frame](#) is returned.

`...` additional arguments that can be passed to function [write.table](#) if `file != NULL`. Supported arguments are: `sep`, `dec`, `fileEncoding`

**Function version**

0.1.0

**Author(s)**

Sebastian Kreutzer, IRAMAT-CRP2A, UMR 5060, CNRS - Université Bordeaux Montaigne (France)

**See Also**

[Example\\_Data](#), [write.table](#)

**Examples**

```
write_InputTemplate()

## Not run:
##Example with file output
write_InputTemplate(file = "~/Desktop/Input.csv")

## End(Not run)
```

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