

# Package ‘xlum’

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**Type** Package

**Title** Read, Write, and Convert XLUM Data

**Version** 0.1.0.9000-64

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**Description** Support for the XLUM-file format for exchange and long-term preservation of luminescence data. Facilitated are the import and export of XLUM-files and the conversion from other ASCII and binary formats commonly used to store luminescence (dating) data.

**License** GPL-3

**Depends** R (>= 4.1),  
utils

**Imports** methods,  
Luminescence (>= 0.9.19),  
xml2 (>= 1.3.3)

**Suggests** spelling (>= 2.2),  
testthat (>= 3.1.3)

**Encoding** UTF-8

**Language** en-GB

**LazyData** true

**RoxygenNote** 7.1.2

**Collate** 'convert\_Daybreak2xlum.R'  
'convert\_binx2xlum.R'  
'convert\_psl2xlum.R'  
'convert\_rlum2xlum.R'  
'convert\_xsyg2xlum.R'  
'methods.R'  
'read\_xlum.R'  
'utils.R'  
'validate\_xlum.R'  
'write\_xlum.R'  
'xlum-package.R'

## R topics documented:

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xlum-package	<i>Read, Write, and Convert xlum Data</i>
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## Description

Support for the XLUM-file format for exchange and long-term preservation of luminescence data. Facilitated are the import and export of XLUM-files and the conversion from other ASCII and binary formats commonly used to store luminescence (dating) data.

## Details

### Support contact

- <https://github.com/R-Lum/xlum/discussions>

### Bug reporting

- <https://github.com/R-Lum/xlum/issues>

### Project source code repository

- <https://github.com/R-Lum/xlum>

### Package maintainer

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (United Kingdom),  
<sebastian.kreutzer@aber.ac.uk>

### Funding

Between 2020–2022, the work of Sebastian Kreutzer as maintainer of the package has received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 844457 (CREDit).

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convert_binx2xlum	<i>Convert Risø BIN/BINX to XLUM</i>
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## Description

Convert Risø BIN/BINX to XLUM

## Usage

```
convert_binx2xlum(file, out_file = NULL)
```

```
convert_bin2xlum(file, out_file = NULL)
```

## Arguments

file	<b>character (required):</b> file
out_file	<b>character (optional):</b> output file, if set a file output is created

## Value

Depending on the setting. If out\_file == NULL an [xml2::xml\\_document](#) object is returned, if file is set the function attempts to write an \*.xlum file‘.

## Function version

0.1.0

## How to cite

Kreutzer, S., 2022. convert\_binx2xlum(): Convert Risø BIN/BINX to XLUM. Function version 0.1.0. In: Kreutzer, S., 2022. xlum: Read, Write, and Convert XLUM Data. R package version 0.1.0.9000-64.

## Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (United Kingdom)

## See Also

[convert\\_rlum2xlum](#), [Luminescence::read\\_BIN2R](#)

## Examples

```
## Not run:
file <- system.file("extdata/BINfile_V8.binx", package = "Luminescence")
convert_binx2xlum(file)

## End(Not run)
```

---

convert\_Daybreak2xlum *Convert Daybreak TXT and DAT files to XLUM*

---

### Description

Convert Daybreak TXT and DAT files to XLUM

### Usage

```
convert_Daybreak2xlum(file, out_file = NULL)
```

### Arguments

file	<b>character (required):</b> file
out_file	<b>character (optional):</b> output file, if set a file output is created

### Value

Depending on the setting. If out\_file == NULL an [xml2::xml\\_document](#) object is returned, if file is set the function attempts to write an \*.xlum file‘.

### Function version

0.1.0

### How to cite

Kreutzer, S., 2022. convert\_Daybreak2xlum(): Convert Daybreak TXT and DAT files to XLUM. Function version 0.1.0. In: Kreutzer, S., 2022. xlum: Read, Write, and Convert XLUM Data. R package version 0.1.0.9000-64.

### Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (United Kingdom)

### See Also

[convert\\_rlum2xlum](#), [Luminescence::read\\_Daybreak2R](#)

### Examples

```
file <- system.file("extdata/Daybreak_TestFile.txt", package = "Luminescence")
convert_Daybreak2xlum(file)
```

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convert_psl2xlum	<i>Convert SUERC PSL-files to XLUM</i>
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## Description

Convert SUERC PSL-files to XLUM

## Usage

```
convert_psl2xlum(file, out_file = NULL)
```

## Arguments

file	<b>character (required):</b> file
out_file	<b>character (optional):</b> output file, if set a file output is created

## Value

Depending on the setting. If `out_file == NULL` an `xml2::xml_document` object is returned, if file is set the function attempts to write an `*.xlum` file‘.

## Function version

0.1.0

## How to cite

Kreutzer, S., 2022. `convert_psl2xlum()`: Convert SUERC PSL-files to XLUM. Function version 0.1.0. In: Kreutzer, S., 2022. `xlum`: Read, Write, and Convert XLUM Data. R package version 0.1.0.9000-64.

## Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (United Kingdom)

## See Also

[convert\\_rlum2xlum](#), [Luminescence::read\\_PSL2R](#)

## Examples

```
file <- system.file("extdata", "DorNie_0016.psl", package = "Luminescence")
convert_psl2xlum(file)
```

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convert_rlum2xlum	<i>Convert RLum-class objects to the XLUM format</i>
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## Description

Converts [Luminescence::RLum](#) objects to xlum format

## Usage

```
convert_rlum2xlum(rlum, file = NULL)
```

## Arguments

rlum	<a href="#">Luminescence::RLum.Data</a> and <a href="#">Luminescence::RLum.Analysis</a> or a <a href="#">list</a> of it ( <b>required</b> ): input for the conversion
file	<a href="#">character</a> ( <i>optional</i> ): file name for the export, if NULL (the default), an <a href="#">xml2::xml_document</a> object is returned

## Details

The function tries to make a best possible conversion of the [Luminescence::RLum](#) to the xlum format. [Luminescence::RLum.Results](#) objects are not supported.

Because of the nature the [Luminescence::RLum](#) structure, the nodes <xlum/>, <sample/> are set automatically because the [Luminescence::RLum](#) does not distinguish between different samples.

## Value

Depending on the setting. If file == NULL an [xml2::xml\\_document](#) object is returned, if file is set the function attempts to write an \*.xlum file'.

## Function version

0.1.0

## How to cite

Kreutzer, S., 2022. convert\_rlum2xlum(): Convert RLum-class objects to the XLUM format. Function version 0.1.0. In: Kreutzer, S., 2022. xlum: Read, Write, and Convert XLUM Data. R package version 0.1.0.9000-64.

## Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (United Kingdom)

## See Also

[Luminescence::RLum.Data](#), [write\\_xlum](#)

## Examples

```
data(ExampleData.RLum.Analysis,  
     envir = environment(),  
     package = "Luminescence")  
convert_rlum2xlum(IRSAR.RF.Data)
```

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convert_xsyg2xlum	<i>Convert Freiberg Instruments XSYG files to XLUM</i>
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## Description

Convert Freiberg Instruments XSYG files to XLUM

## Usage

```
convert_xsyg2xlum(file, out_file = NULL)
```

## Arguments

file	<b>character (required):</b> file
out_file	<b>character (optional):</b> output file, if set a file output is created

## Value

Depending on the setting. If `out_file == NULL` an `xml2::xml_document` object is returned, if file is set the function attempts to write an `*.xlum` file‘.

## Function version

0.1.0

## How to cite

Kreutzer, S., 2022. `convert_xsyg2xlum()`: Convert Freiberg Instruments XSYG files to XLUM. Function version 0.1.0. In: Kreutzer, S., 2022. `xlum`: Read, Write, and Convert XLUM Data. R package version 0.1.0.9000-64.

## Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (United Kingdom)

## See Also

[convert\\_rlum2xlum](#), [Luminescence::read\\_XSYG2R](#)

## Examples

```
file <- system.file("extdata/XSYG_file.xsyg", package = "Luminescence")  
convert_xsyg2xlum(file)
```

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read_xlum	<i>Import XLUM files</i>
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## Description

Imports XLUM-files using [xml2::read\\_xml](#). Comes with a few convenience features, such as the transformation of string lists to numeric vectors where meaningful.

## Usage

```
read_xlum(file, verify = TRUE, output = "xlum_list")
```

## Arguments

file	<a href="#">character</a> ( <b>required</b> ): path to file
verify	<a href="#">logical</a> ( <i>with default</i> ): enable/disable format validation
output	<a href="#">character</a> ( <i>with default</i> ): output object of the import, supported are "xml_document", "list", "xlum_list" (the default)

## Details

### Supported output options

"xlum\_list" (default): imports XML-data and coerces them to list. Numeric values for level <curve> are transposed into [numeric](#) vectors for better handling

"list": imports XML-data and coerces it to a [list](#), no further treatment of data

"xml\_document": unprocessed output from [xml2::read\\_xml](#)

## Value

The output depends on the setting selected in output. It will be either an [xml2::xml\\_document](#), [list](#), or a [list](#) of class `xlum_list`.

## Function version

0.1.0

## How to cite

Kreutzer, S., 2022. read\_xlum(): Import XLUM files. Function version 0.1.0. In: Kreutzer, S., 2022. xlum: Read, Write, and Convert XLUM Data. R package version 0.1.0.9000-64.

## Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (United Kingdom)

## See Also

[xml2::read\\_xml](#), [validate\\_xlum](#), [write\\_xlum](#)



## Examples

```
file <- system.file("extdata/xlum_example.xlum", package="xlum")
read_xlum(file)
```

---

validate\_xlum

*Validate xlum format against an XSD reference schema*

---

## Description

A convenience wrapper around [xml2::xml\\_validate](#) against the reference format description shipped with [xlum-package](#)

## Usage

```
validate_xlum(file)
```

## Arguments

file                    [xml2::xml\\_document](#) (**required**): object to test

## Value

Results of the validation [logical](#) with attributes

## How to cite

Kreutzer, S., 2022. validate\_xlum(): Validate xlum format against an XSD reference schema. In: Kreutzer, S., 2022. xlum: Read, Write, and Convert XLUM Data. R package version 0.1.0.9000-64.

## Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University

## Examples

```
file <- system.file("extdata/xlum_prototype.xlum", package = "xlum")
validate_xlum(file)
```

---

write_xlum	<i>Write XLUM-files</i>
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## Description

Create XLUM-files using [xml2::read\\_xml](#)

## Usage

```
write_xlum(x, file, ...)
```

## Arguments

x	xlum_list, list, <a href="#">xml2::xml_document</a> ( <b>required</b> ) : input object
file	<a href="#">character</a> ( <b>required</b> ): valid file path and file name with ending .xlum (will be add automatically if needed)
...	further arguments to be passed to <a href="#">xml2::write_xml</a>

## Value

Creates an XML-file with ending \*.xlum

## Function version

0.1.0

## How to cite

Kreutzer, S., 2022. write\_xlum(): Write XLUM-files. Function version 0.1.0. In: Kreutzer, S., 2022. xlum: Read, Write, and Convert XLUM Data. R package version 0.1.0.9000-64.

## Author(s)

Sebastian Kreutzer, Geography & Earth Sciences, Aberystwyth University (united Kingdom)

## See Also

[xml2::write\\_xml](#), [read\\_xlum](#)

## Examples

```
file <- system.file("extdata/xlum_prototype.xlum", package="xlum")
out_file <- tempfile()

xlum_data <- read_xlum(file)
write_xlum(xlum_data, out_file)
```

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