

Experimento 2

Calor Específico do Alumínio

Ajuste Exponencial Decrescente

Depois de inserir os resultados nas colunas e fazer o gráfico. Ir à aba de Analysis → Fit Wizard.

The screenshot displays the SciDAVis interface. The 'Analysis' menu is open, with 'Fit Wizard...' selected. The 'Table1' window shows a data table with two columns: '1[X]' and '2[Y]'. The 'Fit Wizard' dialog is open, showing the 'Apply' button and the following settings:

- Type: Numeric
- Format: Decimal
- Decimal Digits: 1
- Selected column type: Double precision floating point values. Example: 123.1

The 'Graph1' window shows a plot of the data from 'Table1_2'. The Y-axis is labeled 'Y Axis Title' and ranges from 30 to 65. The X-axis is labeled 'X Axis Title' and ranges from -500 to 3.500. A single data point is plotted at approximately (0, 61.0), and a thick black curve is drawn through it, representing a fit to the data.

1[X]	2[Y]
0,0	61,0
0,5	60,9
1,0	60,9
1,5	60,9
2,0	60,9
2,5	60,9
3,0	60,9
3,5	60,9
4,0	60,8
4,5	60,8
5,0	60,8
5,5	60,8
6,0	60,8
6,5	60,8
7,0	60,8
7,5	60,8

**Em Category selecionar “Built-in”, Em Function selecionar “ExpDecay1”.
Selecione a opção “Fit using built-in function” e depois selecione “Fit”.**

The screenshot shows the SciDAVis software interface. The main window displays a table with 16 rows and a graph with axes. The 'Fit Wizard' dialog box is open, showing the following configuration:

Category	Function	Expression
User defined	Boltzmann	$y_0 + A \cdot \exp(-x/t)$
Built-in	ExpGrowth	
Basic	ExpDecay1	
Plugins	ExpDecay2	
	ExpDecay3	
	GaussAmp	
	Gauss	
	Lorentz	
	Polynomial	

The 'Fit using built-in function' checkbox is checked. The 'Name' field contains 'ExpDecay1' and the 'Parameters' field contains 'A, t, y0'. The 'Expression' field contains $y_0 + A \cdot \exp(-x/t)$. The 'Fit >>' button is highlighted with a red box.

**Altere a faixa de ajuste colocando, neste caso, “From x = 0; To x = 700”.
Depois selecione a opção Custom Output**

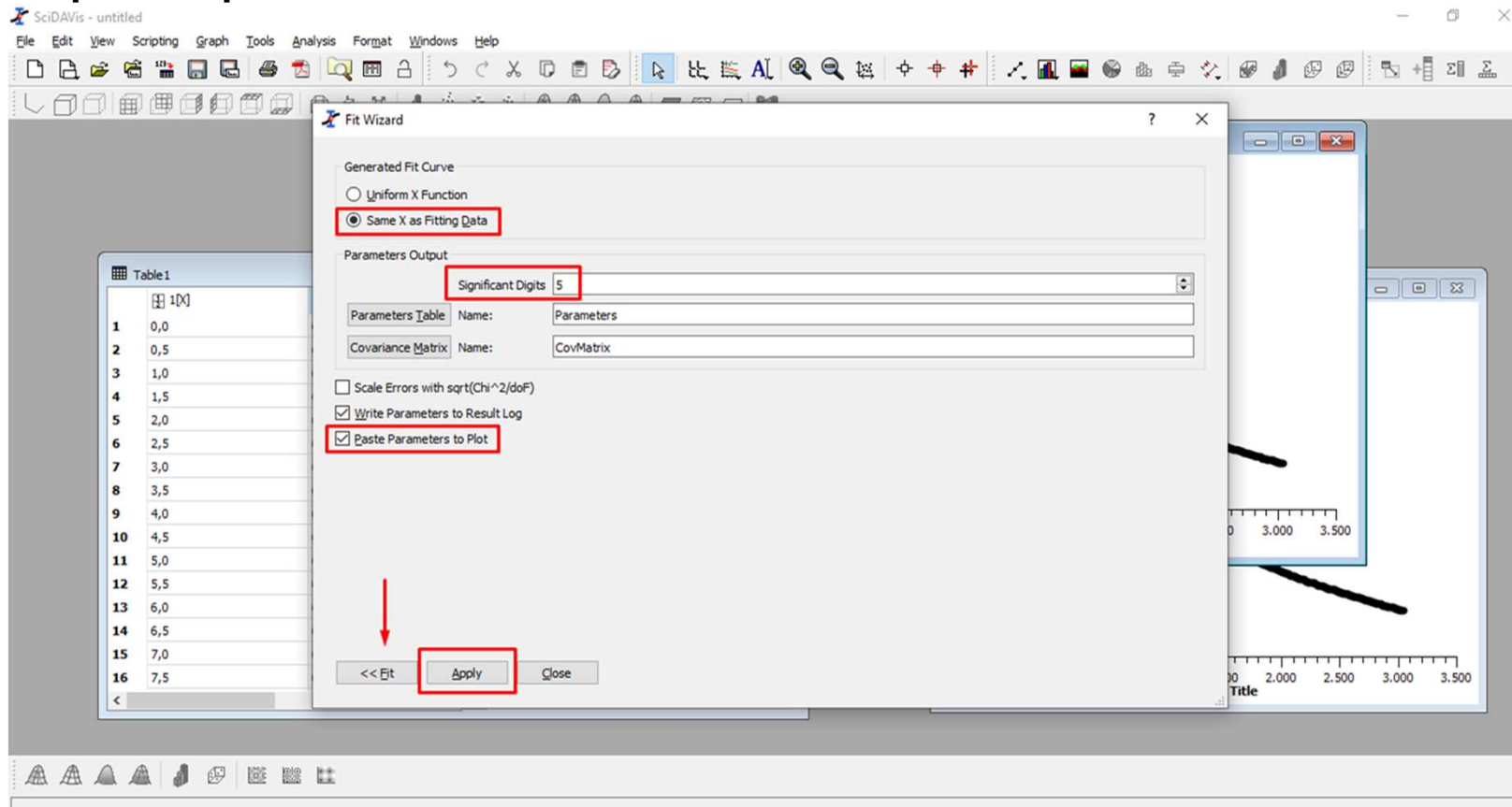
The screenshot displays the SciDAVis software interface. The main window shows a data table with 16 rows and one column labeled '1[X]'. The values in the table are: 0,0, 0,5, 1,0, 1,5, 2,0, 2,5, 3,0, 3,5, 4,0, 4,5, 5,0, 5,5, 6,0, 6,5, 7,0, 7,5. The Fit Wizard dialog box is open, showing the following settings:

- Curve: Table1_2
- Function: ExpDecay1 (x, A, t, y0)
- Equation: $y_0 + A \cdot \exp(-x/t)$
- Initial guesses table:

Parameter	Value
A	1,00000
t	1,00000
y0	1,00000
- Algorithm: Scaled Levenberg-Marquardt
- Color: Red
- From x: 0
- To x: 700
- Iterations: 1000
- Tolerance: 1e-4
- Y Error Source: Errors Unknown, Table1, 1

The 'Custom Output >>' button is highlighted with a red box. The background shows a graph with a scale from 0 to 3.500.

**Marque a opção “Same as x fitting data”, altere o “Significant Digits” para 5, marque a opção “Paste Parameters to Plot” e clique em “Apply”
Depois clique em <<Fit**



Clique em Fit e depois Close

The screenshot displays the SciDAVis interface with the Fit Wizard dialog box open. The dialog box is titled "Fit Wizard" and contains the following settings:

- Curve: Table1_2
- Function: ExpDecay1 (x, A, t, y0)
- Equation: $y_0 + A \cdot \exp(-x/t)$
- Initial guesses table:

Parameter	Value
A	1,00000
t	1,00000
y0	1,00000
- Algorithm: Scaled Levenberg-Marquardt
- Color: Red
- From x: 0
- To x: 700
- Iterations: 1000
- Tolerance: 1e-4
- Y Error Source: Errors Unknown, Table1, 1

At the bottom of the dialog box, the "Fit" button is highlighted with a red box, and a red arrow points to the "Close" button. The background shows a data table with 16 rows and a graph with axes ranging from 0 to 3.500.

Adicione uma coluna à tabela, clicando com o botão direito do mouse e clicando na opção “Add Column”

The screenshot displays the SciDAVis interface. The 'Table1' window shows a table with two columns, X and Y, containing 17 rows of data. A right-click context menu is open over the table, with the 'Add Column' option highlighted in red. The 'Graph2' window shows a plot of the data with an exponential decay fit. The plot includes a legend for 'Table_2' and 'ExpDecay_1_2', and a text box with the following parameters:

Dataset: Table_2
Function: $y_0 + A \exp(-x/t)$
Chi² = 1,8971
R² = 0,99984
A = 24,465 +/- 0,092087
t = 1.318,9 +/- 3,7728e-06
y₀ = 36,36 +/- 0,094249

X	Y
0,0	61,0
0,5	60,9
1,0	60,9
1,5	60,9
2,0	60,9
2,5	60,9
3,0	60,9
3,5	60,9
4,0	60,8
4,5	60,8
5,0	60,8
5,5	60,8
6,0	60,8
6,5	60,8
7,0	60,8
7,5	60,8
8,0	60,7

Selecione a nova coluna criada e vá a opção Formula

The screenshot displays the SciDAVis interface. The 'Results Log' window shows the following data:

```
Results Log
A (amplitude) = 24,465 +/- 0,092087
t (e-folding time) = 1.318,9 +/- 3,7728e-06
y0 (offset) = 36,36 +/- 0,094249

-----
Chi^2 = 1,8971
R^2 = 0,99984

-----
Iterations = 31
Status = success
```

The 'Table1' window shows a table with two columns: '2[Y]' and '3[Y]'. The '3[Y]' column is selected, and its properties are shown in the right-hand pane:

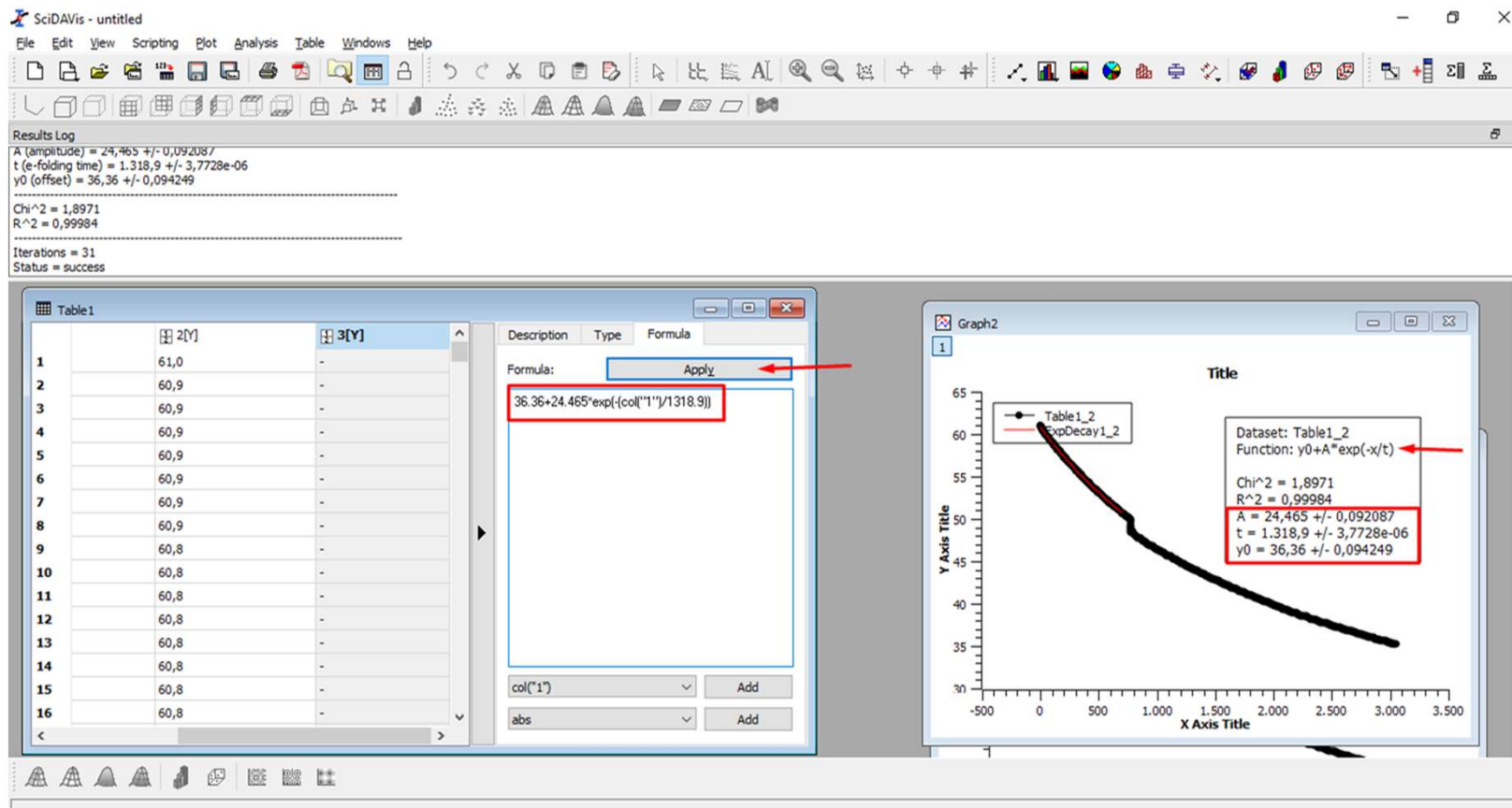
- Description: Formula
- Type: Numeric
- Format: Automatic (e)
- Decimal Digits: 6
- Selected column type: Double precision floating point values
- Example: 123.123

The 'Graph2' window shows a plot of the data from 'Table1_2' with an exponential decay fit. The plot includes the following information:

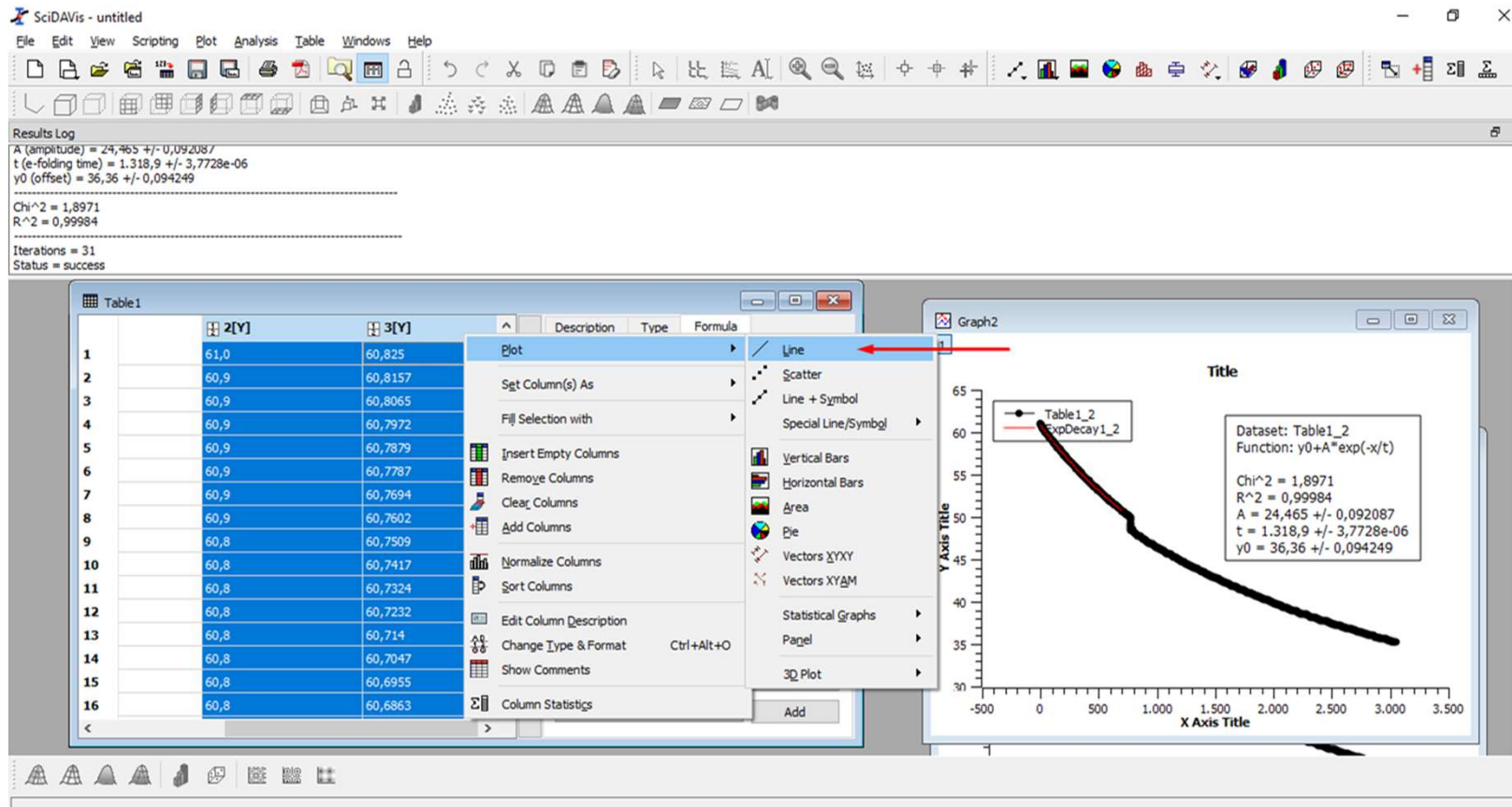
- Dataset: Table1_2
- Function: $y_0 + A \exp(-x/t)$
- Chi^2 = 1,8971
- R^2 = 0,99984
- A = 24,465 +/- 0,092087
- t = 1.318,9 +/- 3,7728e-06
- y0 = 36,36 +/- 0,094249

Row	2[Y]	3[Y]
1	61,0	
2	60,9	
3	60,9	
4	60,9	
5	60,9	
6	60,9	
7	60,9	
8	60,9	
9	60,8	
10	60,8	
11	60,8	
12	60,8	
13	60,8	
14	60,8	
15	60,8	
16	60,8	

Escreva a fórmula do ajuste feito anteriormente, substituindo as variáveis pelos valores. Não é necessário colocar o símbolo igual (=). No local da variável “x” coloque a coluna correspondente, geralmente 1[x], clicando no botão “Add” ao lado de “col(”



Selecione as duas colunas Y segurando a tecla CTRL e clicando nas colunas. Após isso faça o gráfico das duas clicando com o botão direito do mouse em cima de uma das colunas e indo até a opção Plot → Line



O gráfico com os dois dados aparecerá na tela

