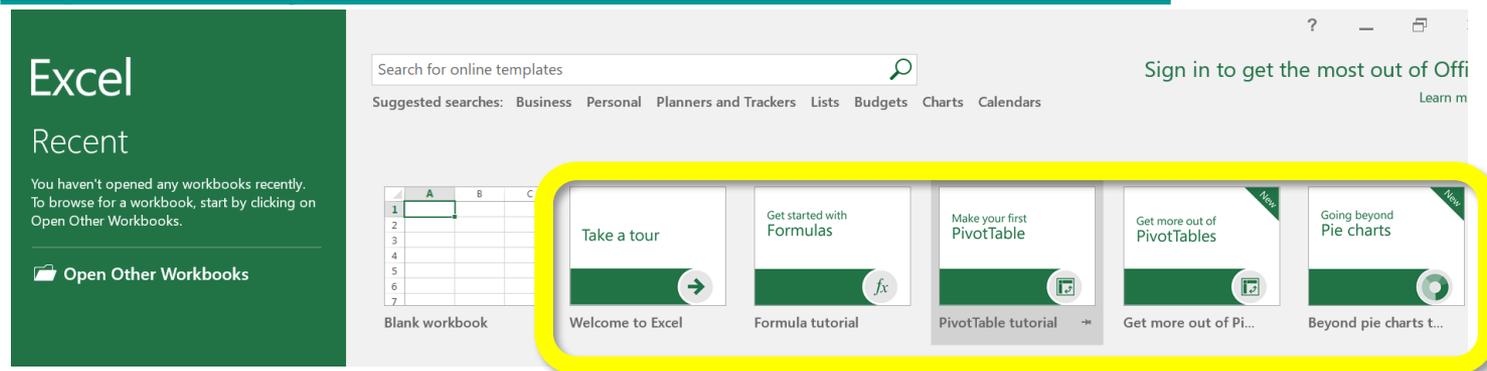


Excel 2016

- Programma più utilizzato, anche nell'industria, per l'elaborazione dati e creazione grafici
- In ricerca, NON è il migliore! Ci sono altre opzioni, quali **Origin** e **MatLab** (disponibile in Ateneo)
- Ci sono vari tutorials online, che troverete anche su Moodle2, ma attenzione alle versione di Excel con cui lavorate (ogni versione è un po' diversa)

TUTORIALS Excel 2016

<https://www.youtube.com/watch?v=QU8wdBVW1TI>



Excel

Recent

You haven't opened any workbooks recently. To browse for a workbook, start by clicking on Open Other Workbooks.

Open Other Workbooks

Search for online templates

Suggested searches: Business Personal Planners and Trackers Lists Budgets Charts Calendars

Sign in to get the most out of Office

Learn more

Blank workbook

Take a tour

Welcome to Excel

Get started with Formulas

Formula tutorial

Make your first PivotTable

PivotTable tutorial

Get more out of PivotTables

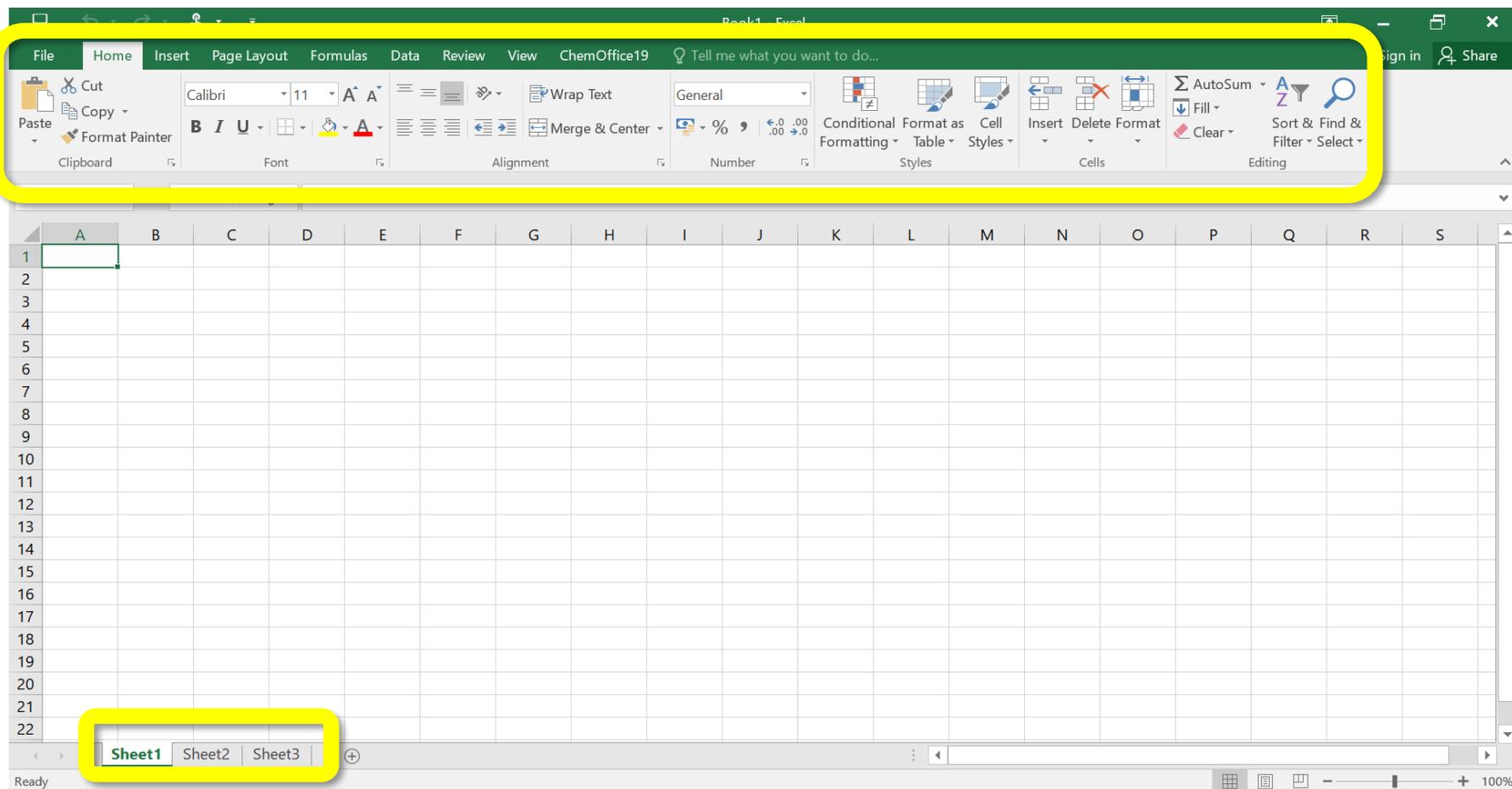
Get more out of Pi...

Going beyond Pie charts

Beyond pie charts t...

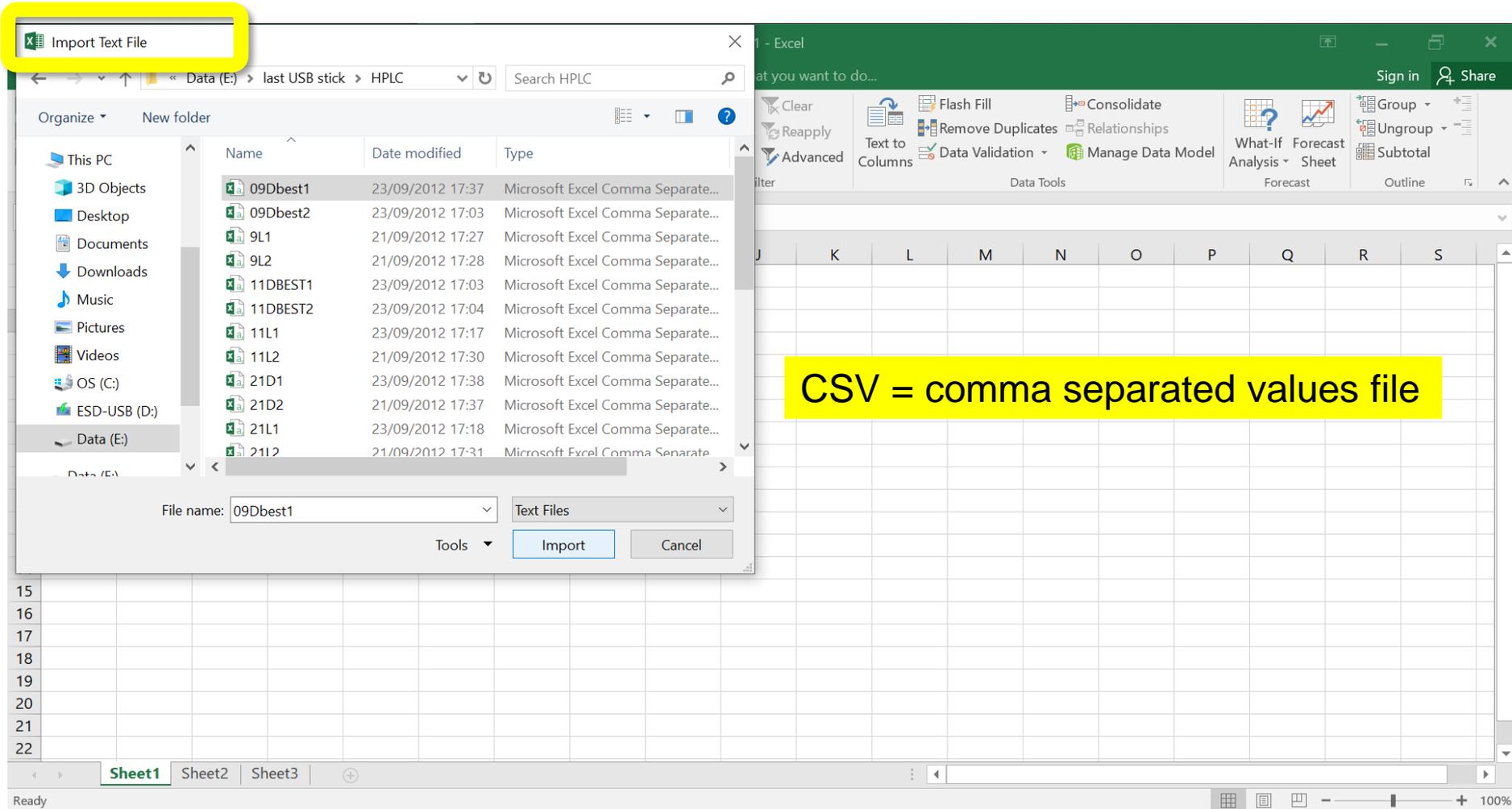
Excel 2016

Classico foglio di lavoro (attenzione ci possono essere più fogli «nascosti»!)



Excel 2016

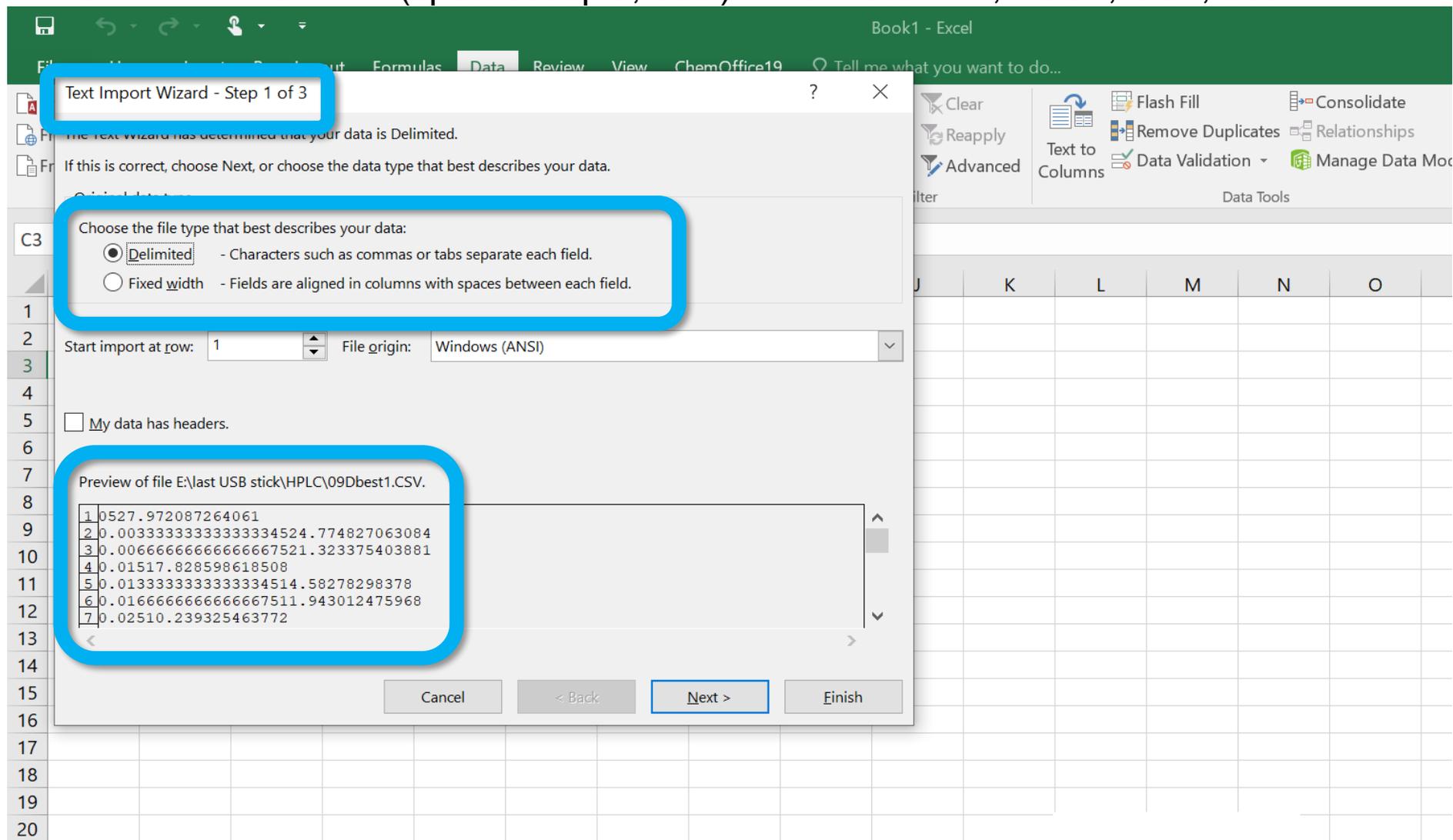
INSERIMENTO DATI (spettroscopia, ecc.) → formato TXT, ASCII, CSV, ecc.



The screenshot displays the Microsoft Excel 2016 interface. A yellow box highlights the 'Import Text File' button in the top-left corner of the Excel window. Below it, a file explorer window is open, showing a list of files in the 'Data (E:) > last USB stick > HPLC' directory. The files listed include '09Dbest1', '09Dbest2', '9L1', '9L2', '11DBEST1', '11DBEST2', '11L1', '11L2', '21D1', '21D2', '21L1', and '21L2'. The 'Import' button in the file explorer is also highlighted in yellow. A yellow text box in the background reads 'CSV = comma separated values file'. The Excel window shows the 'Data Tools' ribbon with various options like 'Flash Fill', 'Remove Duplicates', 'Data Validation', and 'Text to Columns'. The spreadsheet grid is visible with columns K through S and rows 15 through 22.

Excel 2016

INSERIMENTO DATI (spettroscopia, ecc.) → formato TXT, ASCII, CSV, ecc.



Text Import Wizard - Step 1 of 3

The text wizard has determined that your data is Delimited.

If this is correct, choose Next, or choose the data type that best describes your data.

Choose the file type that best describes your data:

- Delimited - Characters such as commas or tabs separate each field.
- Fixed width - Fields are aligned in columns with spaces between each field.

Start import at row: 1 File origin: Windows (ANSI)

My data has headers.

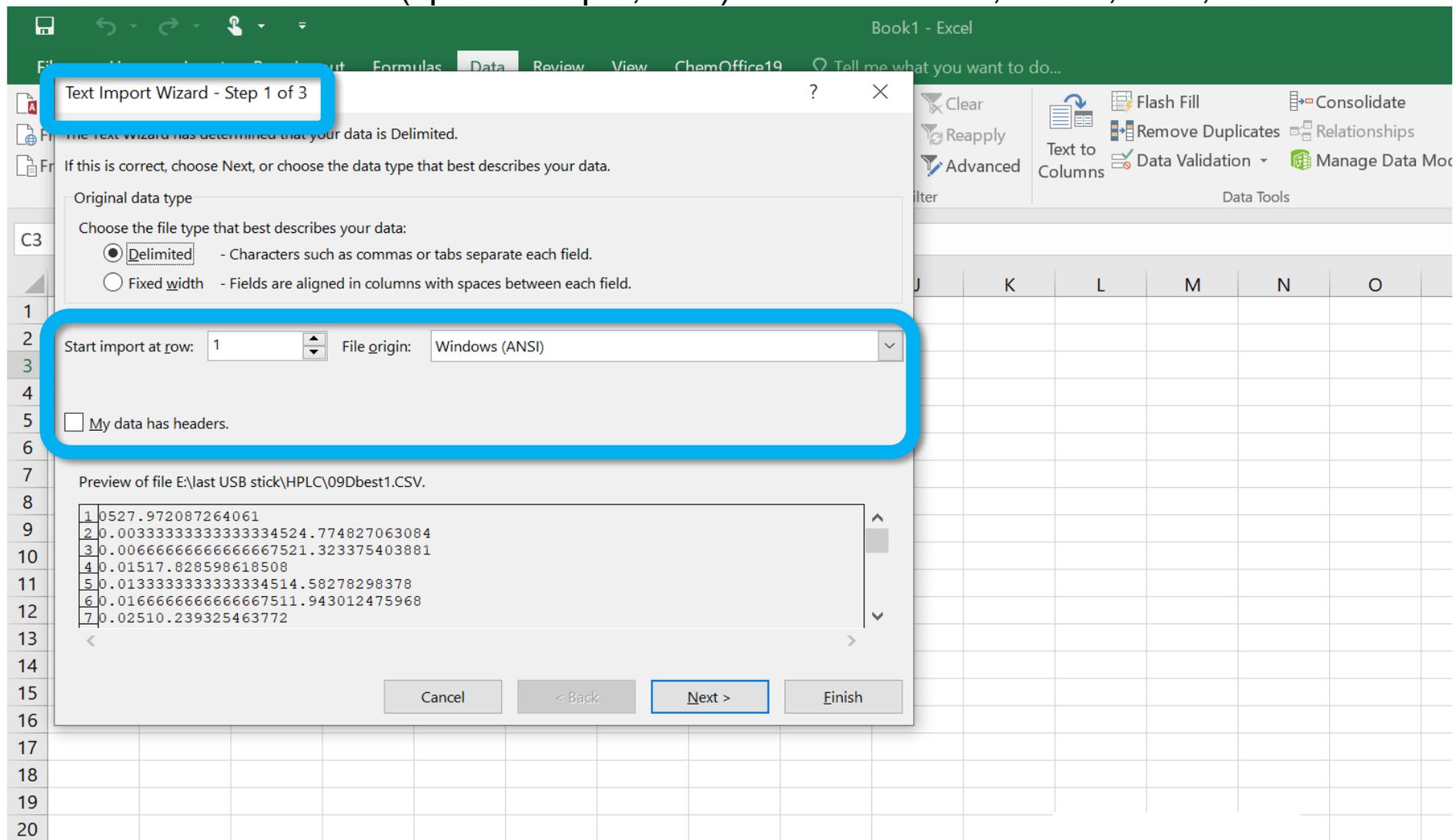
Preview of file E:\last USB stick\HPLC\09Dbest1.CSV.

1	0527.972087264061
2	0.00333333333333334524.774827063084
3	0.0066666666666666667521.323375403881
4	0.01517.828598618508
5	0.01333333333333334514.58278298378
6	0.01666666666666667511.943012475968
7	0.02510.239325463772

Buttons: Cancel, < Back, Next >, Finish

Excel 2016

INSERIMENTO DATI (spettroscopia, ecc.) → formato TXT, ASCII, CSV, ecc.



Text Import Wizard - Step 1 of 3

From the text wizard has determined that your data is Delimited.

If this is correct, choose Next, or choose the data type that best describes your data.

Original data type

Choose the file type that best describes your data:

Delimited - Characters such as commas or tabs separate each field.

Fixed width - Fields are aligned in columns with spaces between each field.

Start import at row: 1 File origin: Windows (ANSI)

My data has headers.

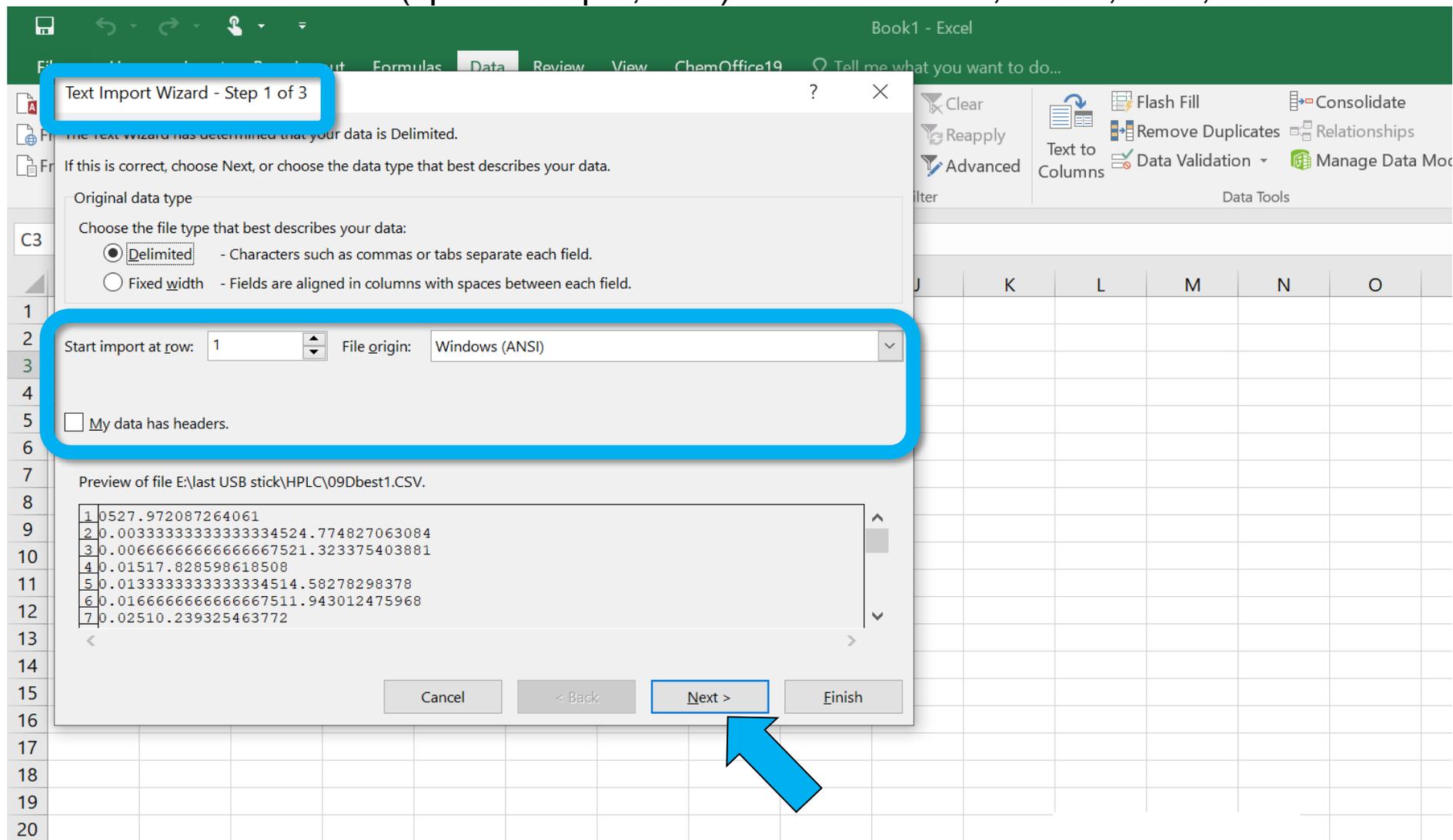
Preview of file E:\last USB stick\HPLC\09Dbest1.CSV.

1	0527.972087264061
2	0.00333333333333334524.774827063084
3	0.00666666666666667521.323375403881
4	0.01517.828598618508
5	0.01333333333333334514.58278298378
6	0.01666666666666667511.943012475968
7	0.02510.239325463772

Cancel < Back Next > Finish

Excel 2016

INSERIMENTO DATI (spettroscopia, ecc.) → formato TXT, ASCII, CSV, ecc.



Text Import Wizard - Step 1 of 3

The text wizard has determined that your data is Delimited.

If this is correct, choose Next, or choose the data type that best describes your data.

Original data type

Choose the file type that best describes your data:

- Delimited - Characters such as commas or tabs separate each field.
- Fixed width - Fields are aligned in columns with spaces between each field.

Start import at row: 1 File origin: Windows (ANSI)

My data has headers.

Preview of file E:\last USB stick\HPLC\09Dbest1.CSV.

1	0527.972087264061
2	0.00333333333333334524.774827063084
3	0.00666666666666667521.323375403881
4	0.01517.828598618508
5	0.01333333333333334514.58278298378
6	0.01666666666666667511.943012475968
7	0.02510.239325463772

Buttons: Cancel, < Back, Next >, Finish

Excel 2016

INSERIMENTO DATI (spettroscopia, ecc.) → formato TXT, ASCII, CSV, ecc.

Text Import Wizard - Step 2 of 3

This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.

Delimiters

- Tab
- Semicolon
- Comma
- Space
- Other:

Treat consecutive delimiters as one

Text qualifier: "

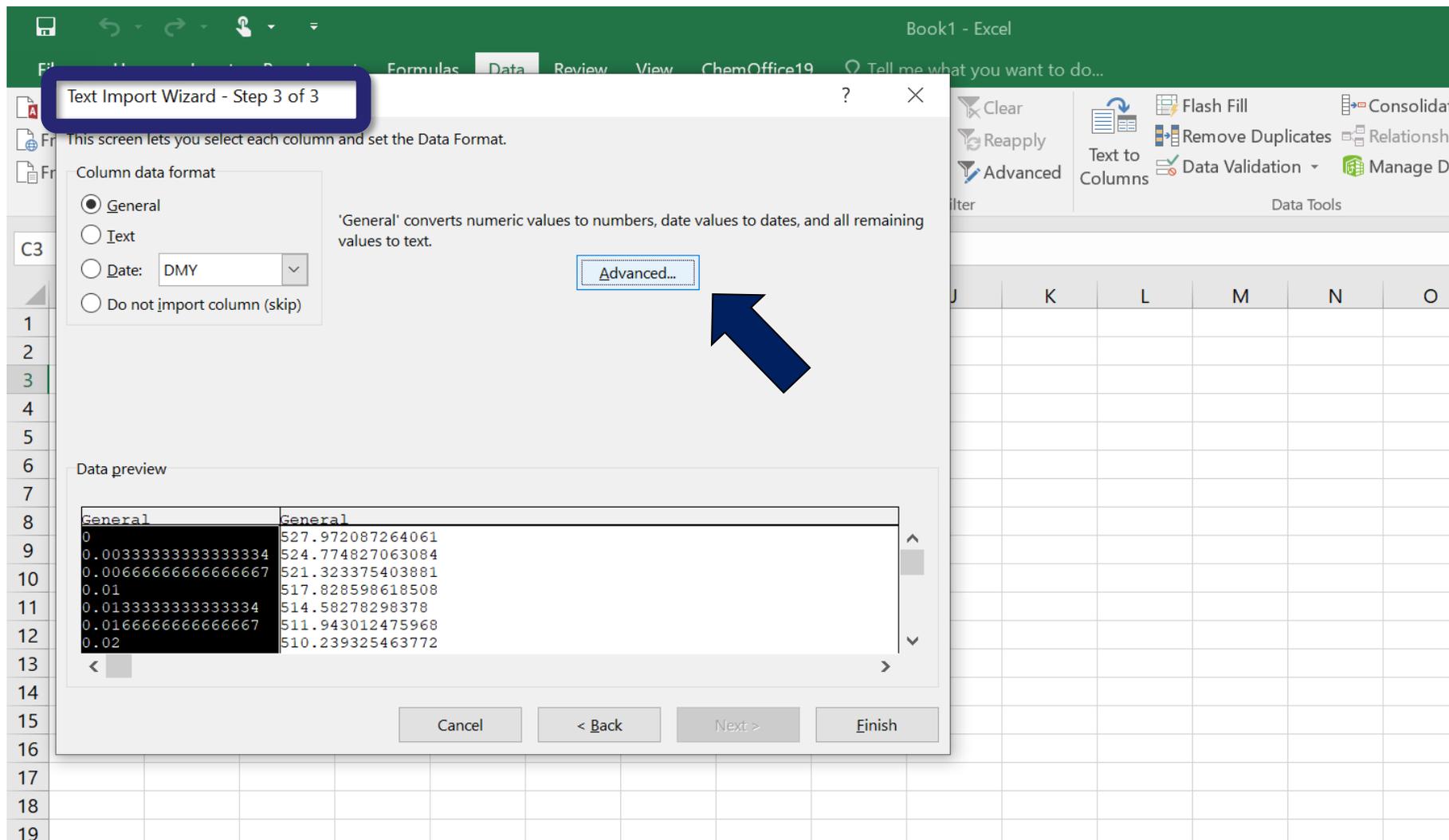
Data preview

0	527.972087264061
0.0033333333333333334	524.774827063084
0.0066666666666666667	521.323375403881
0.01	517.828598618508
0.013333333333333334	514.58278298378
0.016666666666666667	511.943012475968
0.02	510.239325463772

Buttons: Cancel, < Back, Next >, Finish

Excel 2016

INSERIMENTO DATI (spettroscopia, ecc.) → formato TXT, ASCII, CSV, ecc.



Text Import Wizard - Step 3 of 3

This screen lets you select each column and set the Data Format.

Column data format

- General
- Text
- Date: DMY
- Do not import column (skip)

'General' converts numeric values to numbers, date values to dates, and all remaining values to text.

Advanced...

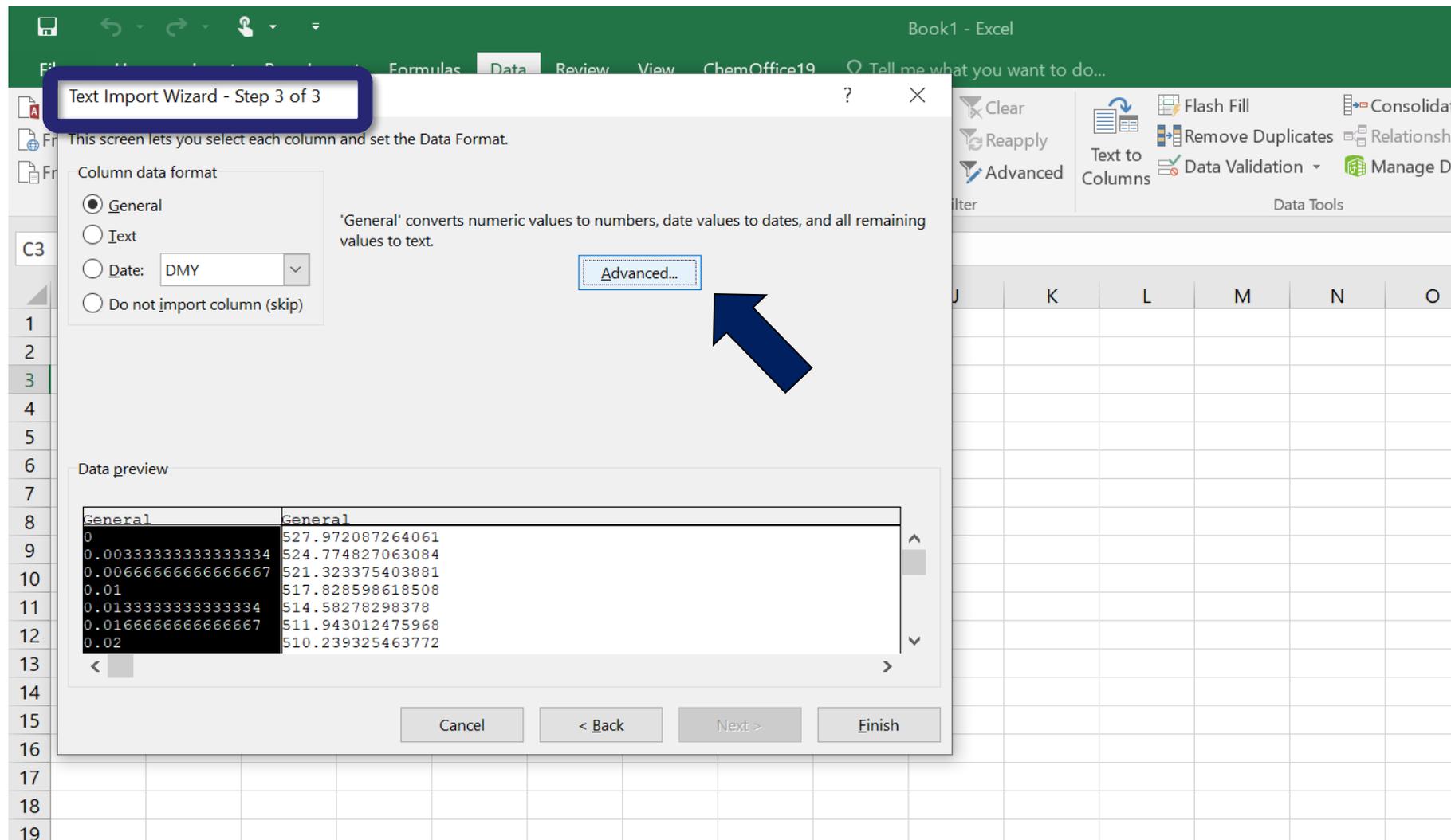
Data preview

General	General
0	527.972087264061
0.003333333333333334	524.774827063084
0.006666666666666667	521.323375403881
0.01	517.828598618508
0.013333333333333334	514.58278298378
0.016666666666666667	511.943012475968
0.02	510.239325463772

Buttons: Cancel, < Back, Next >, Finish

Excel 2016

INSERIMENTO DATI (spettroscopia, ecc.) → formato TXT, ASCII, CSV, ecc.



Text Import Wizard - Step 3 of 3

This screen lets you select each column and set the Data Format.

Column data format

- General
- Text
- Date: DMY
- Do not import column (skip)

'General' converts numeric values to numbers, date values to dates, and all remaining values to text.

Advanced...

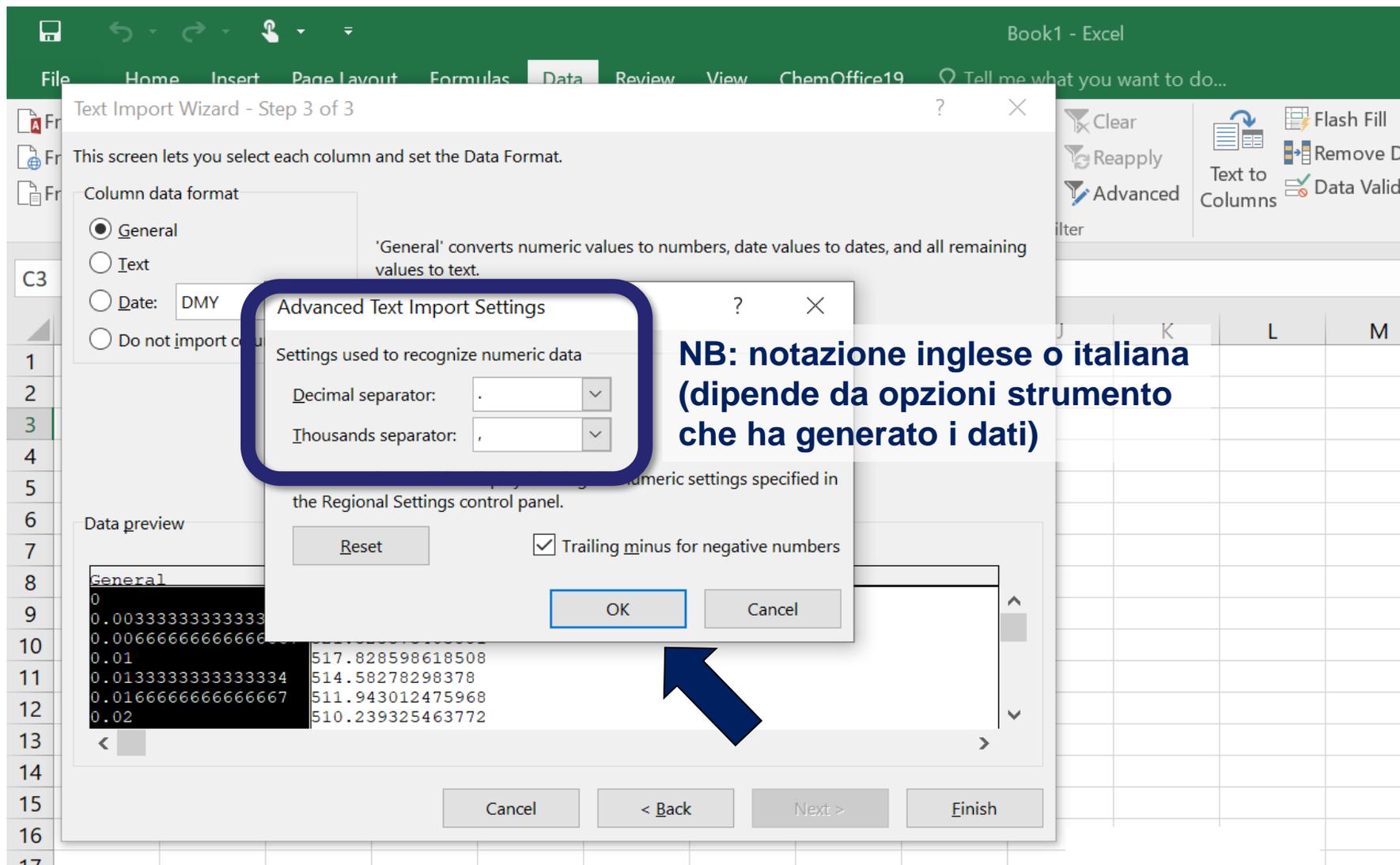
Data preview

General	General
0	527.972087264061
0.003333333333333334	524.774827063084
0.006666666666666667	521.323375403881
0.01	517.828598618508
0.013333333333333334	514.58278298378
0.016666666666666667	511.943012475968
0.02	510.239325463772

Buttons: Cancel, < Back, Next >, Finish

Excel 2016

INSERIMENTO DATI (spettroscopia, ecc.) → formato TXT, ASCII, CSV, ecc.



Text Import Wizard - Step 3 of 3

This screen lets you select each column and set the Data Format.

Column data format

General
 Text
 Date: DMY
 Do not import columns

'General' converts numeric values to numbers, date values to dates, and all remaining values to text.

Advanced Text Import Settings

Settings used to recognize numeric data

Decimal separator: .
Thousands separator: ,

Trailing minus for negative numbers

Reset OK Cancel

Data preview

General	
0	
0.0033333333333333	
0.0066666666666666	
0.01	517.828598618508
0.0133333333333334	514.58278298378
0.0166666666666667	511.943012475968
0.02	510.239325463772

Cancel < Back Next > Finish

NB: notazione inglese o italiana (dipende da opzioni strumento che ha generato i dati)

Excel 2016

INSERIMENTO DATI (spettroscopia, ecc.) → formato TXT, ASCII, CSV, ecc.

Book1 - Excel

File Home Insert Page Layout Formulas **Data** Review View ChemOffice19 Tell me what you want to do...

From Access From Web From Text From Other Sources Existing Connections New Query Show Queries From Table Recent Sources Refresh All Connections Properties Edit Links Sort Filter Clear Reapply Advanced Text to Columns

C3

Import Data

Select how you want to view this data in your workbook.

- Table
- PivotTable Report
- PivotChart
- Only Create Connection

Where do you want to put the data?

- Existing worksheet:
=\$C\$3
- New worksheet

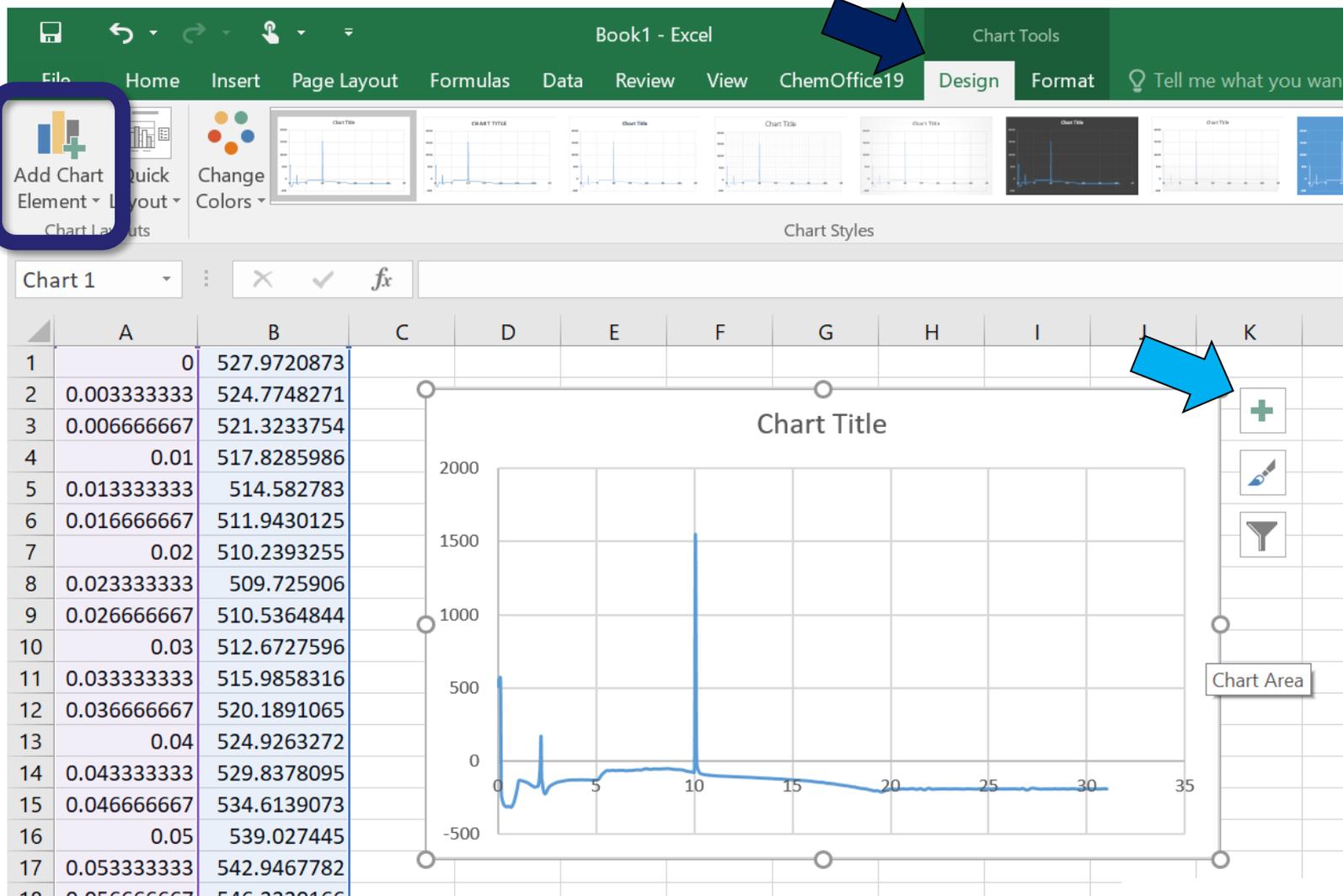
Add this data to the Data Model

Properties... OK Cancel

DOVE volete mettere i dati?

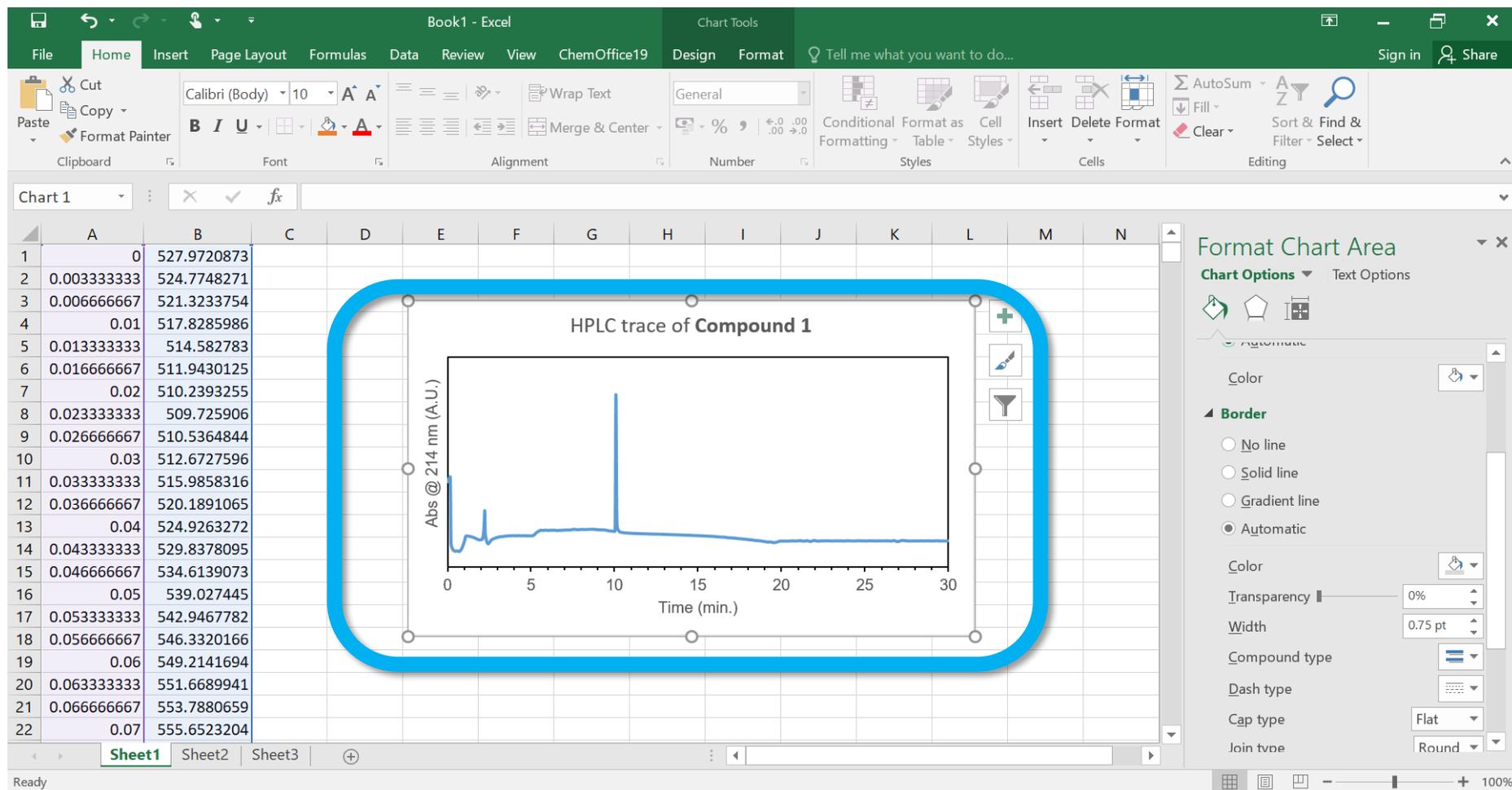
Excel 2016

INSERIMENTO GRAFICI – elementi base



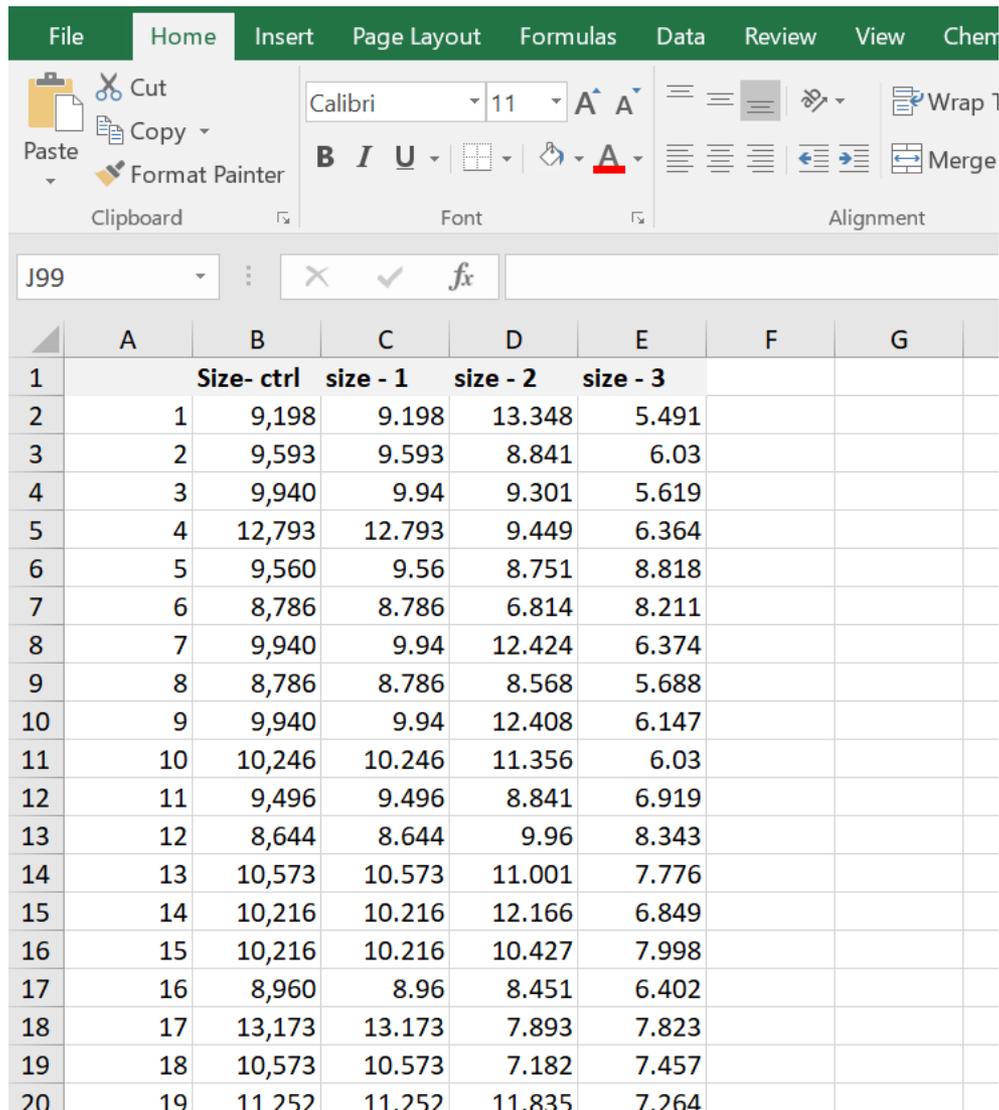
Excel 2016

INSERIMENTO GRAFICI – elementi base



Excel 2016

INSERIMENTO FUNZIONE – media e deviazione standard



The screenshot shows the Microsoft Excel 2016 interface. The ribbon is set to 'Formulas'. The active cell is J99. The data table is as follows:

	A	B	C	D	E	F	G
1		Size- ctrl	size - 1	size - 2	size - 3		
2	1	9,198	9.198	13.348	5.491		
3	2	9,593	9.593	8.841	6.03		
4	3	9,940	9.94	9.301	5.619		
5	4	12,793	12.793	9.449	6.364		
6	5	9,560	9.56	8.751	8.818		
7	6	8,786	8.786	6.814	8.211		
8	7	9,940	9.94	12.424	6.374		
9	8	8,786	8.786	8.568	5.688		
10	9	9,940	9.94	12.408	6.147		
11	10	10,246	10.246	11.356	6.03		
12	11	9,496	9.496	8.841	6.919		
13	12	8,644	8.644	9.96	8.343		
14	13	10,573	10.573	11.001	7.776		
15	14	10,216	10.216	12.166	6.849		
16	15	10,216	10.216	10.427	7.998		
17	16	8,960	8.96	8.451	6.402		
18	17	13,173	13.173	7.893	7.823		
19	18	10,573	10.573	7.182	7.457		
20	19	11,252	11.252	11.835	7.264		

Esempio.

Ipotizziamo di avere:

4 serie di dati (lunghezze)

Colonne B-E

Ognuna con 100 valori

Voglio calcolare media e dev. std.



Excel 2016

INSERIMENTO FUNZIONE – media e deviazione standard

	A	B	C	D	E	F	G	H
87	86	8,999	8.999	8.942	5.304			
88	87	10,319	10.319	6.871	6.513			
89	88	8,397	8.397	7.519	6.641			
90	89	8,356	8.356	5.932	8.571			
91	90	9,342	9.342	3.91	6.841			
92	91	8,783	8.783	6.623	9.253			
93	92	11,038	11.038	6.082	8.113			
94	93	8,783	8.783	6.2	7.108			
95	94	8,941	8.941	7.991	6.329			
96	95	9,527	9.527	5.329	9.956			
97	96	7,566	7.566	6.082	7.202			
98	97	9,834	9.834	7.428	7.364			
99	98	10,862	10.862	4.896	8.12			
100	99	12,181	12.181	5.148	7.448			
101				5.618	8.591			
102	MEDIA	9,835	10					
103	DEVstd	1412.469	1.412469					

COME MAI il DATO
nella cella B103
È “strano”?

Chiaramente la **colonna B** ha
la **virgola per i decimali**
(notazione italiana)
Mentre il programma legge il
punto per i decimali
(notazione inglese)

*NB: Colonna C è “corretta”
e infatti anche i valori di
media e dev. std. sono corretti
(10 +- 1.4)*

Excel 2016

INSERIMENTO FUNZIONE – media e deviazione standard

The screenshot shows the Excel 2016 interface with the 'Format Cells' menu option highlighted in a blue box. The spreadsheet displays data in columns A and B, with the 'Format Cells' dialog box open at the bottom. The data in the spreadsheet is as follows:

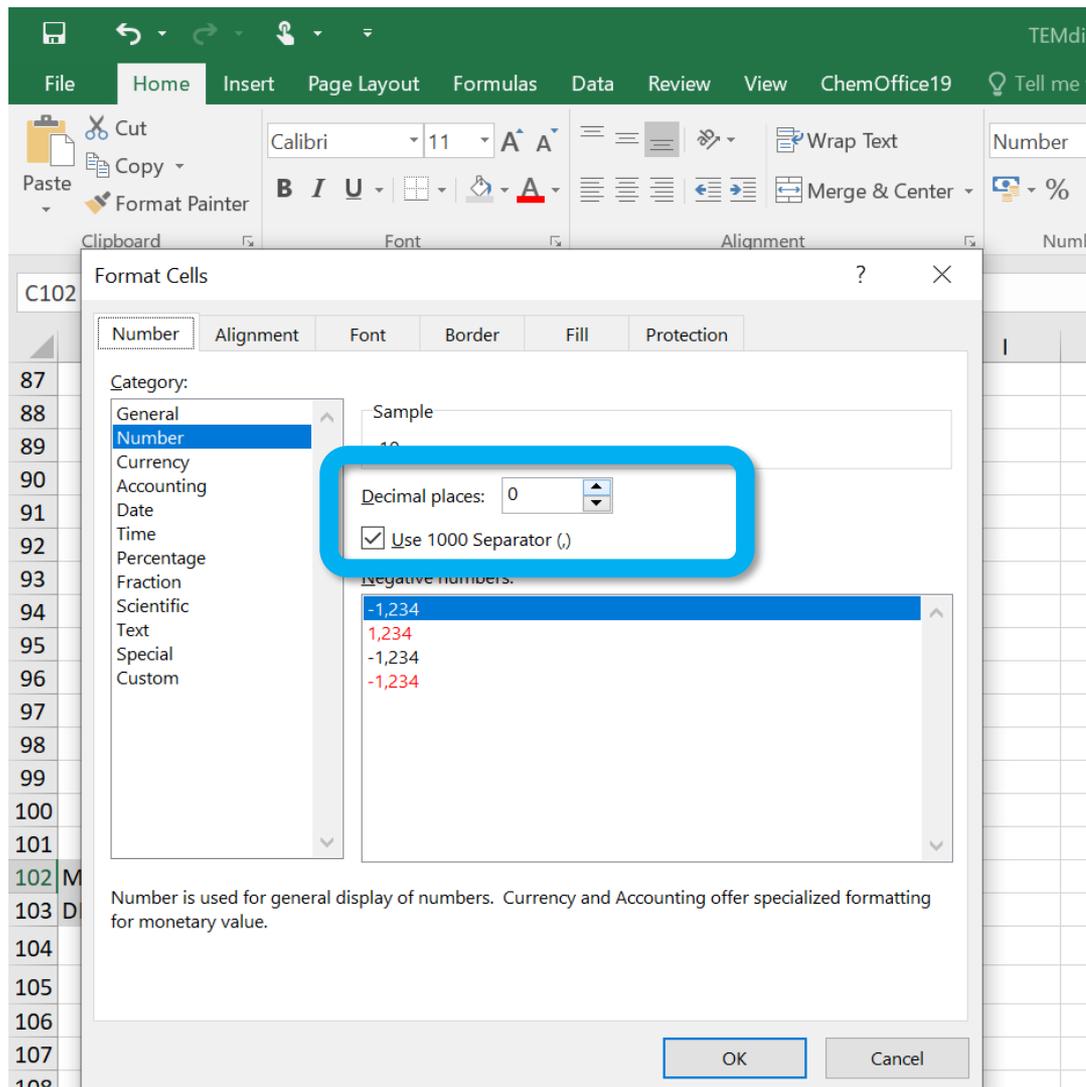
	A	B
87	86	8,999
88	87	10,319
89	88	8,397
90	89	8,356
91	90	9,342
92	91	8,783
93	92	11,038
94	93	8,783
95	94	8,941
96	95	9,527
97	96	7,566
98	97	9,834
99	98	10,862
100	99	12,181
101	100	7,927
102	MEDIA	9,835
103	DEVstd	1412.469

Se voglio vedere i decimali della cella C102 basta cambiare il formato:

1. Seleziono la cella (click)
2. TASTO DESTRO (click) apre il menu
3. FORMAT CELLS (click) apre il menu

Excel 2016

INSERIMENTO FUNZIONE – media e deviazione standard



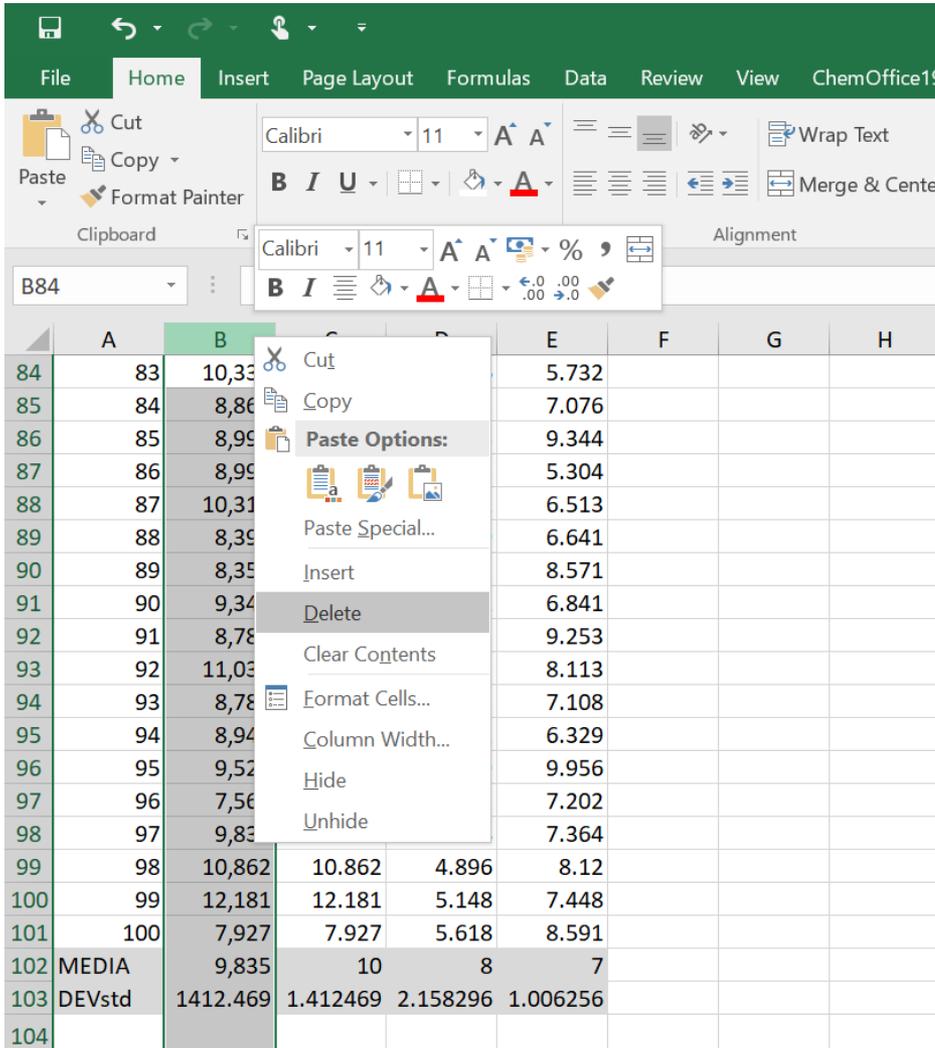
The screenshot shows the Excel 2016 interface with the 'Format Cells' dialog box open for cell C102. The 'Number' tab is selected, and the 'Decimal places' is set to 0. The 'Use 1000 Separator (,)' checkbox is checked. The 'Negative numbers' section shows options for '-1,234', '1,234', '-1,234', and '-1,234'. The 'OK' button is highlighted.

Se voglio vedere i decimali della cella C102 basta cambiare il formato:

1. Selezione la cella (click)
2. TASTO DESTRO (click) apre il menu
3. FORMAT CELLS (click) apre il menu dove posso cambiare i decimali, ecc.

Excel 2016

INSERIMENTO FUNZIONE – media e deviazione standard



The screenshot shows the Microsoft Excel 2016 interface. The 'Home' tab is active, and the 'Clipboard' group is expanded. A context menu is open over column B, with the 'Delete' option selected. The spreadsheet data is as follows:

	A	B	C	D	E	F	G	H
84	83	10,33			5.732			
85	84	8,86			7.076			
86	85	8,99			9.344			
87	86	8,99			5.304			
88	87	10,31			6.513			
89	88	8,39			6.641			
90	89	8,35			8.571			
91	90	9,34			6.841			
92	91	8,78			9.253			
93	92	11,03			8.113			
94	93	8,78			7.108			
95	94	8,94			6.329			
96	95	9,52			9.956			
97	96	7,56			7.202			
98	97	9,83			7.364			
99	98	10,862	10.862	4.896	8.12			
100	99	12,181	12.181	5.148	7.448			
101	100	7,927	7.927	5.618	8.591			
102	MEDIA	9,835	10	8	7			
103	DEVstd	1412.469	1.412469	2.158296	1.006256			
104								

A questo punto posso

CANCELLARE la Colonna B

in modo da tenere solo i dati
corretti

Excel 2016

INSERIMENTO nel grafico di media e deviazione standard

Chart 1

	A	B	C	D	E	F	G	H	M	N
98	97	9.834	7.428	7.364						
99	98	10.862	4.896	8.12						
100	99	12.181	5.148	7.448						
101	100	7.927	5.618	8.591						
102	MEDIA	10	8	7						
103	DEVstd	1.412469	2.158296	1.006256						

2-D Column

2-D Bar

3-D Bar

More Column Charts...

1 2 3

Mi conviene SELEZIONARE I dati da plottare, clicco su INSERT e scelgo il grafico a colonne

Excel 2016

INSERIMENTO nel grafico di media e deviazione standard

Mi conviene
SELEZIONARE I dati
da plottare, clicco su
INSERT e scelgo il
grafico a colonne

	A	B	C	D	E	F	G	H	M	N
98	97	9.834	7.428	7.364						
99	98	10.862	4.896	8.12						
100	99	12.181	5.148	7.448						
101	100	7.927	5.618	8.591						
102	MEDIA	10	8	7						
103	DEVstd	1.412469	2.158296	1.006256						

Excel 2016

INSERIMENTO nel grafico di media e deviazione standard

Chart 2

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
97	96	7.566	6.082	7.202										
98	97	9.834	7.428	7.364										
99	98	10.862	4.896	8.12										
100	99	12.181	5.148	7.448										
101	100	7.927	5.618	8.591										
102	MEDIA	10	8	7										
103	DEVstd	1.412469	2.158296	1.006256										

NON scegliete le colonne 3D (vedi lezione 2) perchè la terza dimensione non significa NULLA!!!

MEDIA

1 2 3

thickness_IFF_16072017

Excel 2016

INSERIMENTO nel grafico di media e deviazione standard

File Home Insert Page Layout Formulas Data Review View ChemOffice19 Design Format Tell me what you want to do...

Add Chart Quick Element Layout Change Colors Chart Layouts Chart Styles Switch Row/Column Data Change Chart Type Move Chart Location

Chart 3 $=SERIES(thickness_IFF_16072017!\$A\$102,,thickness_IFF_16072017!\$B\$102:\$D\$102,1)$

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
97	96	7.566	6.082	7.202													
98	97	9.834	7.428	7.364													
99	98	10.862	4.896	8.12													
100	99	12.181	5.148	7.448													
101	100	7.927	5.618	8.591													
102	MEDIA	10	8	7													
103	DEVstd	1.412469	2.158296	1.006256													

CLICCO 1 VOLTA su una colonna blu così seleziono tutti i dati
(se clicco 2 volte seleziono solo i dati di quella Colonna)
col tasto dx apro menu per formattare colori e linee

CHART ELEMENTS

- Axes
- Axis Titles
- Chart Title
- Data Labels
- Data Table
- Error Bars
- Gridlines
- Legend
- Trendline

Excel 2016

INSERIMENTO nel grafico di media e deviazione standard

The screenshot shows the Excel 2016 interface. The ribbon includes Home, Insert, Page Layout, Formulas, Data, Review, View, ChemOffice19, Design, and Format. The Chart Styles gallery is visible, showing various bar chart templates. The formula bar contains the formula: `=SERIES(thickness_IFF_16072017!A102,,thickness_IFF_16072017!B102:D102,1)`. The worksheet displays data in columns B, C, and D for rows 96-100. A bar chart titled "MEDIA" is plotted, showing three bars with error bars. The Chart Elements task pane is open, showing options for Axes, Axis Titles, Chart Title, Data Table, Error Bars, Gridlines, Legend, and Trendline. The Error Bars options are expanded, showing Standard Error, Percentage, Standard Deviation, and More Options... A blue arrow points to the More Options... button.

Per inserire I MIEI dati nelle barre di errore devo aprire il menu delle OPZIONI

	B	C	D
96	7.566	6.082	7.202
97	9.834	7.428	7.364
98	10.862	4.896	8.12
99	12.181	5.148	7.448
100	7.927	5.618	8.591
A	10	8	7
d	1.412469	2.158296	1.006256

Excel 2016

INSERIMENTO nel grafico di media e deviazione standard

The screenshot shows the Excel 2016 interface with a bar chart titled 'MEDIA'. The chart has three bars with error bars. The 'Format Error Bars' task pane is open on the right, showing the 'Error Bar Options' section. The 'Error Amount' section is expanded, and the 'Specify Value' button is highlighted with a blue arrow.

Format Error Bars

Error Bar Options

- Minus
- Plus

End Style

- No Cap
- Cap

Error Amount

- Fixed value: 0.1
- Percentage: 5.0 %
- Standard deviation(s): 1.0
- Standard error
- Custom: Specify Value

Il menu mi permette di scegliere spessore linee, ecc.

Devo scendere in BASSO in fondo e cliccare sul tasto "specify value" per inserire dati tabella nelle barre d'errore

Excel 2016

INSERIMENTO nel grafico di media e deviazione standard

The screenshot shows the Excel 2016 interface with a bar chart titled 'MEDIA'. The chart has three bars labeled 1, 2, and 3. A 'Custom Error...' dialog box is open, allowing the user to specify error values. The 'Format Error Bars' task pane is also visible, showing options for error bar style and amount.

Custom Error...

Positive Error Value
={1}

Negative Error Value
={1}

OK Cancel

Format Error Bars

Error Bar Options

Minus

Plus

End Style

No Cap

Cap

Error Amount

Fixed value 0.1

Percentage 5.0 %

Standard deviation(s) 1.0

Standard error

Custom Specify Value

A questo punto seleziono le celle con i dati da inserire nelle barre d'errore

IFF_16072017

Excel 2016

INSERIMENTO nel grafico di media e deviazione standard

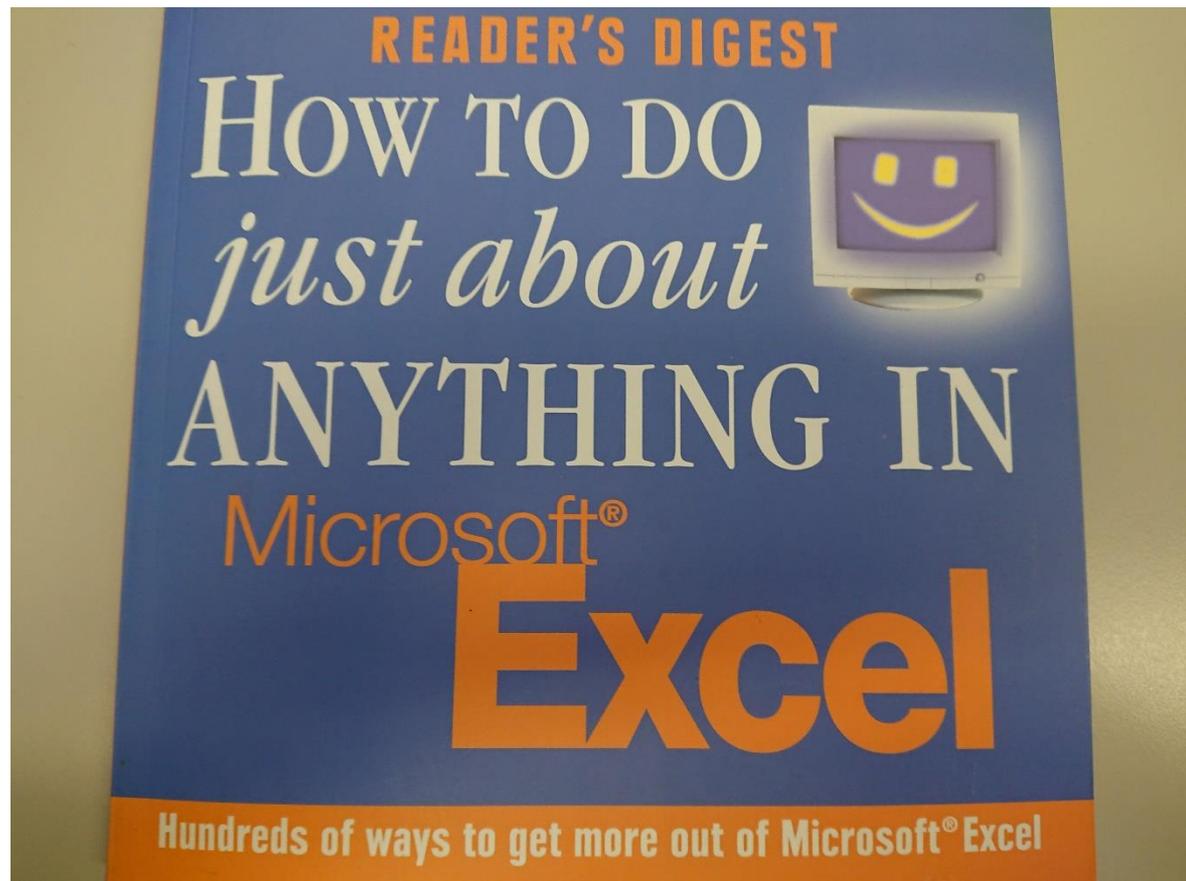
The screenshot displays the Excel 2016 interface. The ribbon is set to 'Design' and 'Format'. The chart area shows a bar chart with two bars labeled '1' and '2', each with error bars. The chart is titled 'MEDIA'. The 'Format Error Bars' task pane is open on the right, showing options for 'Error Bar Options', 'Shadow', 'Glow', and 'Soft Edges'. A context menu is also visible over the chart, with 'Format Error Bars...' highlighted.

	B	C	D	E	F	G	H	I	J	K	L	M	N	O
96	7.566	6.082	7.202											
97	9.834	7.428	7.364											
98	10.862	4.896	8.12											
99	12.181	5.148	7.448											
100	7.927	5.618	8.591											
A	10	8	7											
td	1.412469	2.158296	1.006256											

Nota: sono sempre all'interno del menu "format error bars" a cui posso accedere anche con un click (tasto dx) sulle barre d'errore per cambiare colore/spessore linee ecc.



Excel - resources



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