

A STYLE GUIDE FOR EUSPEN PUBLICATIONS

NUMBERS

Do not use commas within numbers, use hard spaces *e.g.* 10 000 not 10,000. A space should be left between groups of three digits on either the right or left hand side of the decimal place:

15 739.012 53

Spell out numbers from one to ninety-nine in full, from 100 to 999 999 use numerals (except when they are approximates).

Thereafter use 'm' or 'bn' for sums of money, quantities or inanimate objects in copy, *e.g.* '£10m', '5bn tonnes of coal', '30m doses of vaccine'; but million or billion for people or animals, *e.g.* '1 million people', '3 billion rabbits', *etc.*

Be consistent within a sentence: 'the number of features rises from eight to fourteen', rather than 'the number of feature rises from eight to 14'.

Do not mix fractions and decimals.

If a sentence cannot be rewritten to avoid a number as the first item, the number must be written in full: 'Eight of the twenty subjects were unharmed by our experiment'.

UNITS

Quantities and units must follow BS ISO 80000-1:2009 *Quantities and units*.

In particular, each statement of a quantity, *A*, should be represented by a numerical value {*A*} and appropriate units [*A*]:

$$A = \{A\} \cdot [A]$$

For example the statement:

'length is 23.0 ± 0.1 mm'

is not correct as the first numerical value, 23.0, does not explicitly have a unit. It could be correctly presented as:

'length is 23 mm ± 0.1 mm' or

'length is (23.0 ± 0.1) mm' or

'length/mm = 23.0 ± 0.1'

This final notation, where the label is separated from the unit by the solidus, is recommended for use in labelling charts and tables, *e.g.* 'car length/mm', 'output voltage/V', 'reading/a.u.' (a.u. is arbitrary unit), 'number/1'.

It should be clear to which unit symbol a numerical value belongs and which mathematical operation applies to the value of a quantity. So 'a sample 35 cm x 48 cm' is correct but 'a sample 35 x 48 cm' is not and similarly '100 g ± 2 g' is correct but not '100 ± 2 g'.

When referring to a range which starts at zero, either use the word 'zero' or ensure that the '0' value has the appropriate units, *e.g.* 0 mm to 100 mm.

In addition, the following 'units' are not permitted: 'ppm', 'ppb'. The unit 'per mil', denoted by ‰, should not be used – rewrite using fractional or decimal power notation.

Fractional quantities can be easily expressed within these guidelines:

$$3 \mu\text{g}/\text{kg} \quad \text{or} \quad 3 \times 10^{-9}$$

Only units of the SI and those units recognised for use with the SI should be used to express the values of quantities.

All unit names are written in lower case (including newton or kilogram) except Celsius.

The unit symbol is in lower case unless the name of the unit is derived from a proper name, in which case the first letter of the symbol is in upper case (*e.g.* K for kelvin, N for newton, but m for metre).

Unit symbols are unaltered in the plural. So '5 m' is correct, not '5 ms' as a measurement of length. Sub-multiples and multiples do not use a hyphen separator: 'micro-Newton' is incorrect for **two** reasons, it should be 'micronewton'.

Unit symbols and unit names should not be mixed.

Abbreviations such as 'sec' (for either s or second) or 'mph' (for either metres or miles per hour) are not allowed. Use full unit names: 'the subject was observed travelling at twenty miles per hour'.

A non-breaking (hard) space must be inserted between the numerical value and unit symbol ('25 kg', but not '25-kg' nor '25kg'), except for plane angle units (° ' "), where there is no space. Hence, 'the temperature in the laboratory was 20 °C' is correct, as is 'the item rotated by 15° before stopping'. Beware end of lines, where a breaking space will split across the line end; a hard space will not split.

If the spelled-out name of a unit is used, the normal rules of English are applied.

The percentage sign, '%', is to be treated as a symbol and thus a non-breaking space should be left between the numerical value and the unit symbol. Hence '25 %' is correct and '25%' is not.

Note that there is a (non-breaking) space in '± 15'.

When using the dot multiplier symbol, it is not a full-stop, but rather a dot at mid height ‘·’. It is used as one of the four acceptable ways of combining symbols for quantities in a product of two or more quantities:

$$ab, a b, a \cdot b, a \times b$$

Note that the symbol ‘×’ is not an ‘x’, but rather a multiply symbol. A small torque could have units of ‘mN m’, or ‘mN · m’, but best not to use ‘mNm’, as this is unclear.

Do not write ab^{-1} without a space between a and b^{-1} , in order to prevent misinterpretation.

A solidus ‘/’ shall not be followed by a multiplication sign or a division sign on the same line unless parentheses are inserted to avoid any ambiguity:

$$ab \text{ divided by } c = ab/c = ab c^{-1}$$

$$(a/b) \text{ divided by } c = a \text{ divided by } bc = (a/b)/c = a/(bc) \text{ not } a/b/c$$

There shall be spaces on both sides of most signs for dyadic operators such as +, −, ±, × and · (but not for the solidus), and relations, such as =, <.

A compound unit formed by dividing one unit by another shall be indicated in one of the following ways:

$$\frac{m}{s}, m/s, m \cdot s^{-1}, m s^{-1}$$

Try to remain consistent in the choice of compound unit construction, except where layout or other constraint may cause ambiguity.

MATHEMATICAL SYMBOLS

Use the symbol ‘×’ rather than ‘x’ when denoting a multiplication:

$$2.1 \times 10^3 \text{ N, rather than } 2.1 x 10^3 \text{ N.}$$

Choose either the dot or cross for matrix multiplication, as required. Symbols for quantities should be presented using *italic* fonts. This applies also to coordinate symbols, *e.g.* ‘the x -axis indicates the strength of the reaction’. Matrices or vectors are usually in bold-roman font, *e.g.* **a**, **B**, **M**.

The following principles for the printing of subscripts apply. A subscript that represents a physical quantity or a mathematical variable, such as a running number, is printed in *italic* type. Other subscripts, such as those representing words or fixed numbers, are printed in Roman type, *e.g.*

ITALIC SUBSCRIPTS

C_p (p : pressure)
 c_i (i : running number)

ROMAN SUBSCRIPTS

C_g (g : gas)
 c_3 (3: third)

$\Sigma_i a_n \omega_i$	(n : running number)	g_n	(n : normal)
F_x	(x : x-component)	μ_r	(r : relative)
g^{ik}	(i, k : running numbers)	S_m	(m : molar)
l_λ	(λ : wavelength)	$T_{1/2}$	($1/2$: half)

CHARTS, FIGURES, GRAPHS

In general charts should be monochrome, rather than presented using default Excel colours, which are often difficult to read and reproduce. Bounding boxes should be removed.

Chart axes showing the values of quantities must obey the same requirements that apply elsewhere. Usually it is not practical to apply the unit to each numerical value on an axis and in this case the axis label should be in the form ' $A/\{A\}$ '.

e.g. 'pressure/Pa' is correct, 'pressure (Pa)' is not correct. The following two charts demonstrate some of these points. There are at least eight reasons to reject this:

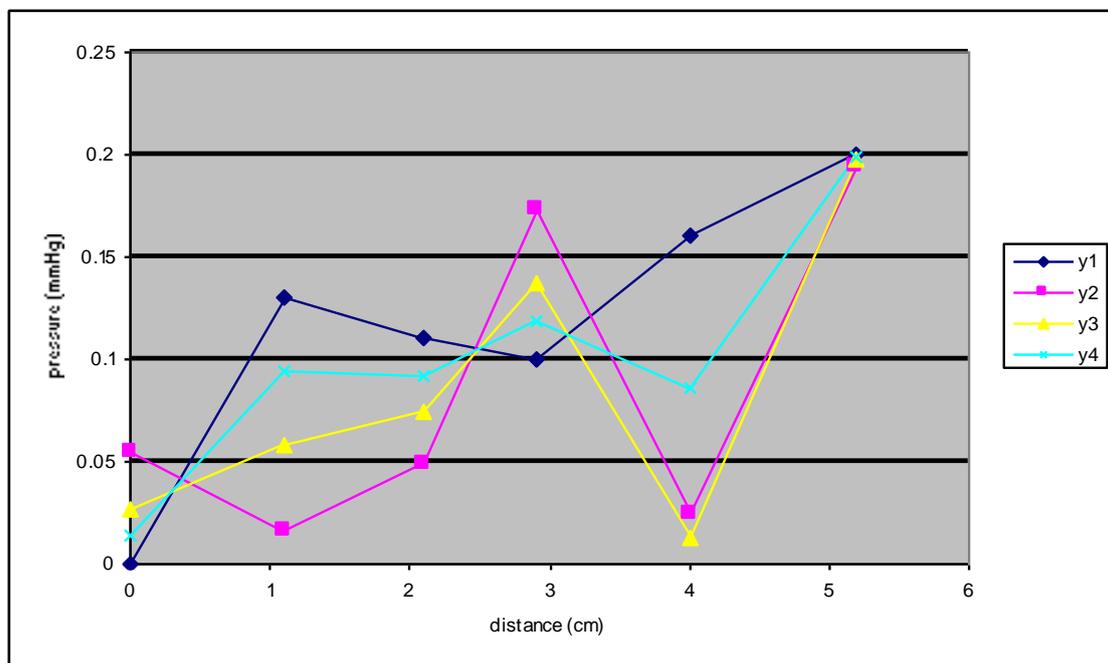


Figure 1 is not very good at all

- (1) The lines are in colour and when printed in monochrome, they will have similar grey scales.
- (2) The axes labels are not in the format of 'quantity/unit'.
- (3) 'mmHg' is not an SI unit.
- (4) The axes labels are in too small a font size.
- (5) The legend labels are in too small a font size. (The abscissa label is not even printing correctly).
- (6) The grey coloured background is difficult to print properly.

- (7) The abscissa uses a mixed format of decimal precision ('0.1', '0.15').
- (8) The figure and legend are surrounded by a box.
- (9) The figure caption should not run on and be self-referential. Use some form of punctuation after 'Figure x' e.g. 'Figure 1. This is a graph.' or 'Figure 1 – the best image obtained.'. Finish the caption with a full stop (the caption obeys normal English punctuation rules).

The following is about as good as could be expected using Excel; error bars should be included too.

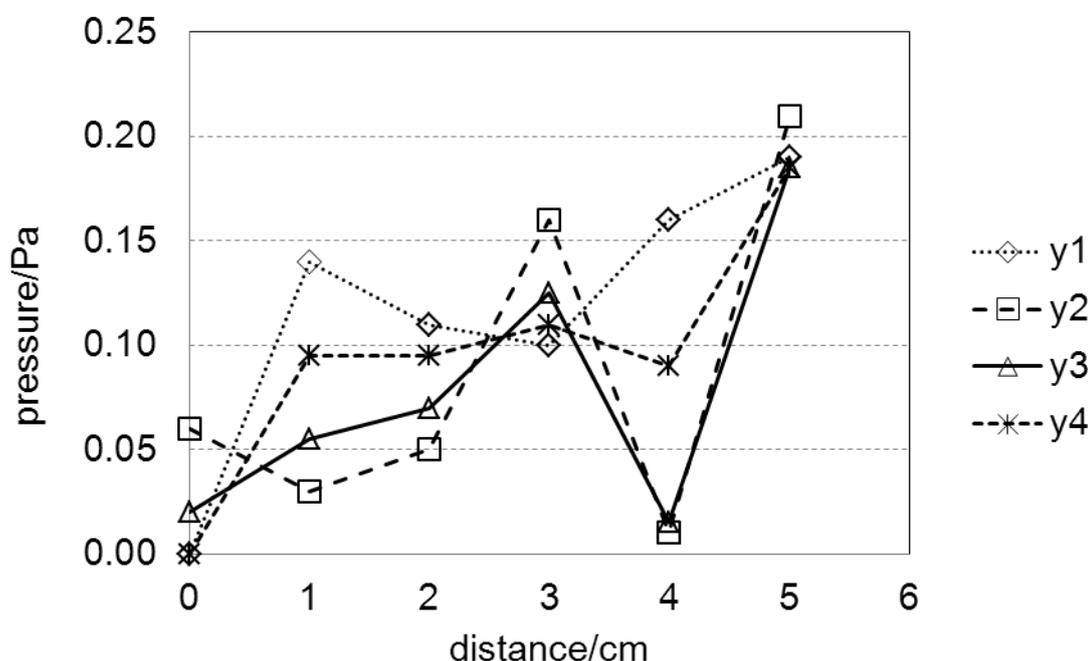


Figure 2. A much better example of the data.

TABLES

Tables should be numbered sequentially: 'Table 1', 'Table 2', and should be cited in the text as 'table 1', 'table 2', *i.e.* without abbreviation and without unnecessary capitalisation of an improper noun.

Examples:

Table 1. A simple table.

Distance/m	Velocity/m·s ⁻¹
100	23.56
150	34.64
200	23.76

Table 2. A table with headings spanning two columns.

Nucleus	Thickness/mg·cm ⁻²	Composition	Separation energies	
			<i>E</i> , n/MeV	<i>E</i> , 2n/MeV
¹⁸¹ Ta	19.3 ± 0.1	Natural	7.6	14.2

^{208}Pb	3.8 ± 0.8	99 % enriched	7.4	14.1
^{209}Bi	2.6 ± 0.01	Natural	7.5	14.1

Table and figure captions should include some marker between the number and the caption text. This can be a full stop, or a hyphen. Be consistent throughout the paper.

SPECIFIC SPELLINGS

Spelling should be that used in the Oxford English Dictionary supported by the McGraw-Hill Dictionary of Scientific and Technical Terms.

ENGLISH PUNCTUATION

Use apostrophes correctly: *e.g.* 1950s does not have one; neither does SMEs, nor CMMs, nor NMIs.

They are simply plurals. However, the apostrophe is correct in the following because it is a possessive apostrophe:

“I have heard that 1995's warmest month was May”, or “The CMM's probe was bent”, or “The PCs' insides were all found to have corroded”.

RESULTS

Apply the methodology to generate numeric results. If measured data are available, compare the numeric results to measured results. Comment on agreement between theoretical and measured results.

REFERENCES

All references must be cited, and vice versa.

All tables and figures should be referenced in the text. This helps the reader understand where the figure/table belongs (if it is moved during typesetting to fit the journal formatting) and helps the reader see why the item has been included.

A complete reference should provide your reader with enough information to locate the article concerned and should consist of: surname(s) and initials, date published, title of journal or book, volume number, editors (if any) and, for books, town of publication and publisher (in parentheses), and finally the page numbers. Where there are up to ten authors, all authors' names should be given in the reference list. Where there are more than ten authors, only the first name should appear followed by *et al.*

NUMERICAL SYSTEM (VANCOUVER)

In the numerical system you should number your references sequentially through the text. The numbers should be given in square brackets, *e.g.* [1], [2, 5], [2, 5, 7-11] and one number can be used to

refer to several instances of the same reference. The reference list at the end of the article lists the references in numerical order, not alphabetically.

Examples:

- [1] Strite S and Morkoc H 1992 *J. Vac. Sci. Technol. B* **10** 1237-39
- [2] Jain S C, Willander M, Narayan J and van Overstraeten R 2000 *J. Appl. Phys.* **87** 965
- [3] Kendall M A F and Quinlan N J 2004 Intradermal ballistic delivery of micro-particles into excised human skin for drug and vaccine applications *J. Biomech.* **37** 1733-41
- [4] Nakamura S, Senoh M, Nagahama S, Iwase N, Yamada T, Matsushita T, Kiyoku H and Sugimoto Y 1996 *Japan. J. Appl. Phys.* **35** L7

And cite these in the text as

Jain *et al.* [2] were a bunch of idiots who could not understand the key publications in their field [1, 4], and presumably built a time machine in order to have referenced a later work [3], several years before it was written...

FORMATTING REFERENCES

The list of authors should be in the form: family name (with only the first letter capitalized) followed by the initials with no full-stops after the initials. Authors should be separated by a comma except for the last two which should be separated by 'and' with no comma preceding it.

The article title (if given) should be in lower case letters, except for an initial capital, and should follow the year.

The journal title should be abbreviated and in *italic*. If a journal has several parts denoted by different letters the part letter should be inserted after the journal in Roman type, *e.g.* *Phys. Rev. A*.

Both the initial and final page numbers should be given, where possible. The final page number should be in the shortest possible form and separated from the initial page number by dash, *e.g.* 1203–14, *i.e.* the numbers '12' are not repeated.

When referring to an electronic journal, use article numbers instead of page numbers.

When referring to books, conference proceedings and reports, all text is given in roman type, except for the book title, which is in *italics*. Include as many items as possible from the following list, in order: Authors, year, book title, editors, place (city, *etc.*) of publication, published, volume, page number(s).

Examples:

- [1] Kurata M 1982 *Numerical analysis for semiconductor devices* (Lexington, MA: Heath)
- [2] Caplar R and Kulisic P 1973 *Proc. Int. Conf. on Nuclear Physics (Munich)* vol 1 (Amsterdam: North Holland/American Elsevier) p 517
- [3] Szytula A and Leciejewicz J 1989 *Handbook on the physics and chemistry of rare earths* vol 12, ed K A Gschneidner Jr and L Erwin (Amsterdam: Elsevier) p 133

- [4] Kuhn T, Binder E, Rossi F, Lohner A, Rick K, Leisching P, Leitenstorfer A, Elsaesser T and Stolz W 1994 Coherent excitonic and free-carrier dynamics in bulk GaAs and heterostructures *Coherent optical interactions in semiconductors: Proc. NATO Advanced Research Workgroup (Cambridge, UK, 11–14 August 1993) (NATO Advanced Study Institute, Series B: Physics vol 330) ed R T Phillips (New York: Plenum) pp 33–62*

PASSIVE/ACTIVE, FIRST PERSON/THIRD PERSON

The passive is often the most natural way to give prominence to the essential facts:

‘Air was admitted to the chamber’

rather than:

‘We admitted air to the chamber’.

In the acknowledgements, the language has a more personal tone, so ‘I’ and ‘we’ may be used.