Writing Scientific English

Dimensions and properties:

There are several different ways of describing dimensions in English
1. Structure 1: x be (is) 3 centimeters long (adjective).
The river is 50 meters broad.
2. Structure 2: x has a length of 3 centimeters.
The well has a depth of 45 meters.
The pipes have a thickness of 20 centimeters.
3. Structure 3: fronted statements
The length of x is 3 cm.
Notice: St (2): The well has a depth of 45 meters.
St (3): The depth of the well is 45 meters.
Examples: The specific gravity of clay is 2.7.
The diameter of the cheaper kinds of electric wire is approximately 1.3 mm.
Summary of structures:
St (1): x is 3cm long.
St (2): x has a length of 3cm.
St (3): The length of x is 3cm.

Qualified Statements of dimensions.

If a dimension is not given exactly the fact that it is not exact should be made clear. (about) is used in non-scientific English. Approximately may be used in more technical English.
X is approximately 3 cm long.
X is approximately 3cm in length.

The qualifying phrases: under, over, just under, a little over, etc. can also be used.
The length of AB=9.03 cm
AB is just over 9cm long.
AB has a length of over 9cm.
The length of AB is a little over 9cm.

There are two possible forms with other qualifications.

St (2): AB has an approximate length of AB is 9cm.
AB has a length of approximately 9cm.
St (3): The approximate length of AB is 9cm.
The average length of AB is 9cm.
The exact length of AB is 9cm.

Simple statements of comparison

Study these examples:

1. X is long**er** than y.
2. Benzene is **more** complicated than methane.
3. River water usually contains **more** impurities than well water.

Notice these points:

a. short adjectives take er and est.

b. long adjectives take more and most.

c. More and less are used with singular nouns.

d. Fewer is used with plural nouns. Fewer oil wells are drilled this year.

Exercise:

	Car A	Car B
Price	1000$	1300$
Engine size	1000c.c	1500c.c
Fuel consumption	7 lit/100km	9 lit/100km
length	4.2m	4.6m
height	1.7m	1.6m
Maximum speed	130kph	145kph

Remember:

1. Begin with a general statement and then discuss the detailed differences.
2. You may use either have or be:

Car B has a higher price than Car A.

Have

Car A has a lower price than Car B.

Car B is more expensive than Car A.

Be

Car A is cheaper than Car B.

Notice: with the verb, be there are two possibilities:

a. 1. The kilometer is the longest metric unit of measurement.

. 2. The longest metric unit of measurement is the kilometer.

b. 1. Car D is the most expensive.

.2. The most expensive car is D.
Scientists prefer to use the (2) statements because it shows fronting.
Another form may be used by scientists: The car with the highest price is D.
There is another way of making comparisons which is common in scientific English.

1. X is shorter than y= x is not as long as y

2. Mathematics is more interesting than English =English is not as interesting as mathematics.

The use of this structure with compared nouns needs care.
Water has a higher boiling point than alcohol= Alcohol doesn't have as high as a boiling point as water.

Qualified comparative statements:

Comparative statements can be qualified in order to make them more informative- exactly how much bigger? Approximately how much longer?
Notice the following comparatives that have been qualified:
….is slightly longer ….
….. a little longer….
……considerably longer..
…….much longer…..
…..three times longer..
….more than three times longer..
…..somewhat more complicated …
…considerably more…
Certain qualifications are also possible with the…
…as ……..as..structure. It is used with almost, nearly and with times-twice as….., three times as….., half as……, etc.

A note on modals in scientific English.

After the present simple, the most common verb forms in scientific English are those which contain modals. The most frequent modals are:
Group 1: can, may, might, could
Group2: will
Group3: should, must, have to
Group 1: modals---make statement on possibility and probability.
The glass bottle breaks when dropped. (98-100)% probability.
The bottle can break when dropped . (40-70)% probability.
The bottle may break when dropped. (20-40)% probability.
The bottle could/might break when dropped. (5-20)% probability.

The bottle can not break when dropped. (almost no chance: 0-2)% probability.
Group2: will
a. The seawater corrodes the iron. (about the action of seawater in a certain area on a certain piece of iron).

b. The seawater will corrode the iron. (prediction about the action of certain seawater on a certain piece of iron-you predict when you claim that something will happen, as in, it will rain tomorrow).
a&b have different meanings.
Now compare
c. Sea-water corrodes iron. (general statement based on knowledge of the laws of science).

d. Sea-water will corrode iron. (it is a prediction based on knowledge of laws of science).
Making statement about something that always happens and predicting it comes to the same thing. So, c and d have the same meaning.
Hence: will and the present simple have the same meaning in well-known, general scientific statements). This is why it is possible to write both.
☒ If pure water is heated to 100 oC at sea level, it boils.
☒ If pure water is heated to 100 oC at sea level, it will boil.
Group 3:
Most useful modals is (should). Should is often used in written warnings and instructions.
Concrete should contain at least 12% cement.