Communication scientifique, écrite et orale, en langue anglaise

Third session

How to publish a paper – Part III.

1. Question period

What is the Impact Factor?
From what sections a paper is composed of?
In which order we proceed in the preparation of the manuscript?
When the title is wrong?

2. What tense to use?

a. Reference on earlier works

When already published results are discussed, they should be treated in *present* tense. The reason of this rule is ethical. In general, we cite such results because they are earlier then those what we are going to present in our work, so we *respect* them. Also, what is considered to be a general truth should be written in present tense. When we make reference to our own previously published papers, they also should be treated in present tense.
Examples:
"Norton and Hof showed [3] that strain rate sensitivity *increases* with temperature."

"Streptomycin *hinders* the growth of tuberculosis [5]."
"The Earth *is* round (Ptolemy)".

b. Our work

When we speak about our new findings, they should be said in *past* tense. Therefore, the Abstract should be in past tense (because it is a short summary of our results), the experimental part, the "Results" and "Discussion" sections, too.

In general, use present tense when you cite earlier results and use past tense when you describe your own findings.

Exemples:

> **"Rice *showed* that the effect of strain rate sensitivity *is* a smoothening of the yield potential [4]."**
>
> **"Table II *shows* that the minimum temperature of transformation *was* –150°C."**
>
> **The results of calculations and statistical analyses should be also in present tense.**
> **Example: "The statistical data presented in Table 4 *indicate* that the growth rate of the second generation *slowed* down when the CO_2 concentration *was* increased."**

c. Active versus passive voice

The use of passive voice was very much extensive in the past. The reason is that this kind of description is not personnel ("I" or "we" do not appear), so it reflects modesty. These days, however, one can see more and more papers written in active voice: "I found…", "We showed…", etc. It is true that the use of direct voice allows a shorter expression: "It has been found" in contrast to: "I found". In any case, if you are the single author and you choose direct voice, you cannot write: "We". Then you are forced to use: "I". Such papers are frequent in medical sciences (medical doctors, however, are usually not that modest as scientists in other fields).

3. Some typical errors in style and spelling

An exercise:

Underline the right one:

air-flow	**airflow**
by-pass	**bypass**
by-product	**byproduct**
can not	**cannot**
clear-cut	**clearcut**
co-worker	**coworker**
cross over (n.)	**crossover (n.)**
crossover (v.)	**cross over (v.)**
dark field	**darkfield**
data is	**data are**
disc	**disk**
electron micrograph	**electronmicrograph**
halflife	**half life**
herpesvirus	**herpes virus**
large concentration	**high concentration**
fewer data	**less data**
little data	**few data**
low quantity	**small quantity**
media	**mediums**
photomicrograph	**microphotograph**
mid-point	**midpoint**
much data	**many data**
newborn	**new-born**
occurance	**occurrence**
over-all	**overall**
radioactive	**radio-active**
saltwater	**salt water**
seawater	**sea water**
semi-complete	**semi complete**
low concentration	**small concentration**
step-wise	**stepwise**
technique	**technic**
teflon	**Teflon**
transfered	**transferred**
transfering	**transferring**
transferable	**transferrable**
ultra-sound	**ultrasound**
untested	**un-tested**
waterbath	**water bath**
wavelength	**wave length**

X ray (adj.)	**X-ray (adj.)**
X-ray (n.)	**X ray (n.)**

Solution of the above puzzle:

air-flow	**airflow**
by-pass	**bypass**
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waterbath	**<u>water bath</u>**
<u>wavelength</u>	**wave length**
X ray (adj.)	**<u>X-ray (adj.)</u>**
X-ray (n.)	**<u>X ray (n.)</u>**

One digit numbers should be fully spelled, example: "A three component composite was considered...» When the number is more than one digit, however, it has to be written as a number: "15 rabbits were used in the experiment".

Avoid saying: "it is easy" or "it is simple". Science is never easy or simple. You have to be modest. You can say instead: " it can be readily seen…", "One can show that…"

4. Authors

It is better to be filled out at the end. (See order of the authors in session 1.)

5. Abstract

The abstract is an extremely concise version of the paper. To write with care. The Reader will start with this. It is important. Let us complete it also at the end.

6. Key words

They are used in the search gears of softwares of scientific information services.
That could be done now, still, let us postpone it, too.

7. Introduction

It is possible to do now, or, we could do it later. It is important to do now if we want to put equations into it (because of their numbering). This is the case now.

An introduction consists of three parts:

- First we define the position of the subject, emphasize its importance.
- In a second part, an examination and evaluation of previous works is carried out.
- In the last part, we describe briefly what we are going to do in the present paper. At the very end of the introduction, we can even mention some of the results that will be obtained.

Example for *first* part of introduction:

Thanks to technical progress, new materials emerge with improved performance. They are used in more and more extreme conditions. Composite materials are good examples. When they are subjected to high temperatures, their components display enhanced sensitivity to the applied strain rate. It is important to be able to predict the strain rate sensitivity of a composite material in such conditions of testing. The subject of this paper is to give some new formulas for the calculation of the effective strain rate sensitivity of a composite material.

Example for *second* part of introduction:

It is well established that strain rate dependence of mechanical strength of materials can be described by a power law relationship between the strain rate and the stress (Norton and Hof, 1954):

$$\sigma = k\left(\frac{\dot{\varepsilon}}{\dot{\varepsilon}_0}\right)^m . \qquad (1)$$

Here σ is the stress, $\dot{\varepsilon}$ is the strain rate, k is the strength of the material and $\dot{\varepsilon}_0$ is a reference constant (this is the strain rate at which the stress level is: $\sigma = k$). Finally, m characterizes the effect of strain rate sensitivity. Relation (1) is valid at a constant value of the strain (when the material displays strain hardening). While k normally decreases with an increase of temperature, m usually *increases*. In this way, the effect of the strain rate sensitivity becomes more and more important in the stress level that the material can sustain in a given application.

However, a composite is made of two (or more) components that normally do not have the same m values in their constitutive law:

$$\sigma_1 = k_1\left(\frac{\dot{\varepsilon}_1}{\dot{\varepsilon}_0}\right)^{m_1} , \qquad (2)$$

$$\sigma_2 = k_2\left(\frac{\dot{\varepsilon}_2}{\dot{\varepsilon}_0}\right)^{m_2} . \qquad (3)$$

An important question arises then: what is the effective m value of the composite? Little efforts have been done so far to answer this problem. To estimate the m value, many authors simply employ the so-called rule of mixture:

$$m = f_1 m_1 + f_2 m_2 . \qquad (4)$$

Here f_1 and f_2 are the volume fractions of the two phases, they some up to 1:

$$f_1 + f_2 = 1 . \qquad (5)$$

Those authors who do not wish to introduce further assumptions in their work (like relation (4)) may use an implicit numerical way to find out the effective *m* value (see, for example, in Toth et al. (1994)).

Example for *third* part of introduction:

In the present paper, *analytical* expressions are derived for the effective strain rate sensitivity exponent of a composite material. Two types of boundary conditions are considered: i. strain, ii. stress controlled conditions of testing. It is shown under what conditions relation (4) can be used. The new theoretical formulas are applied to a geological composite material, the mixture of camphor and octachloropropane, in the whole volume fraction range. At large concentrations, the interaction between inclusions cannot be neglected. To account for that, the so–called differential scheme is employed. The results obtained are in good agreement with experiments.