Grammar

Use of the Gerund

The gerund can be used like a noun, and it can be modified by determiners like direct and indirect articles (the, a), or pronouns (my, your).
The freezing of water is one of the most common transformations in nature.
The gerund can be used like a verb and have an object.
They finally stopped questioning all information.
Note that some verbs can be used with both the gerund and the infinitive with a change in meaning. These verbs and examples are listed in any English grammar book.

Gerund after Prepositions

Work with a partner. Use the gerund and form meaningful sentences with the prepositions from the box and the following phrases.

after; before; by; of; on; to; without

alter the size of the sample – increase the temperature

_______________________________________________________________________
in spite - study hard – not pass the exam

_______________________________________________________________________
look forward – finish the academic year

_______________________________________________________________________
the edge of the ski – facilitate turning - cut into the snow

_______________________________________________________________________
see the new instrument - enter the lab

_______________________________________________________________________
start the instrument – read the manual first

_______________________________________________________________________
Gerund after Adjectives + Preposition

Add the prepositions from the box, some of which will have to be used several times, and change the verbs into the gerund.

about; against; at; for; in; of; on; to; with;

She is good/bad ___________________________ (work) with students.
He is angry _______________________________ (lose) his notebook.
Professor X. is disappointed ______________________ (see) such a bad report.
The instruments are famous ______________________ (give) reliable performance.
The company is interested ______________________ (hire) him.

Gerund after Nouns + Preposition

This is the advantage ___________________________ (use) underground cable.
Special clothing protects against the danger ______________________ (be) exposed to radiation.

Gerund after Verbs + Preposition

He was accused ……………………………………………… (plagiarize) from the internet.
The research group concentrates ______________________ (develop) applications for new composites.
Students have to cope _____________________________ (solve) many problems.
Medical interns have to get used ______________________ (work) long hours.
They decided _________________________________ (use) non-recyclable materials.
Gerund after Certain Verbs

Note that certain English verbs require a following gerund. Lists of such verbs are listed in any English grammar book. Below are a few examples.

*Use the gerund of the verbs in brackets to form meaningful sentences with the verbs from the box and the following phrases.*

admit; avoid; consider; include; justify; suggest

The task ________________________________ (write) an essay.
He had to ________________________________ (pay) that much for the chemical.
Please try to______________________________ (expose) the sample to light.
We ________________________________ (vary) the temperature and frequency.
She ________________________________ (have, miss) this aspect of the material’s failure.
The manual ________________________________ (work) under the exclusion of oxygen.
Grammar: Subordinate Clauses

Subordinate clauses are phrases that give answers to questions like Why? What … for?
Why are impurity atoms added to these materials?
Impurity atoms are added in order to influence electrical properties.

Expressions Introducing Subordinate Clauses

*in order to/so as to + the infinitive of the verb*

The properties of the material were changed in order to/so as to improve performance.

*so that*

The properties of the material were changed so that performance improved.

*for + noun + to + infinitive*

For the metal to melt, higher temperatures must be used.

Rewrite the following sentences, using the expressions in brackets.

Scientists planned to make possible the development of integrated circuitry. That’s why they introduced semiconductors. (in order to)

__________________________________________

__________________________________________

__________________________________________

The audience stayed in the lecture hall because they wanted to be able to hear the second lecture. (so that)

__________________________________________

__________________________________________

__________________________________________

Researchers added impurities, because conductivity had to be optimized. (so as to)

__________________________________________

__________________________________________

__________________________________________
Circuit breakers were installed, because one did not want the system to overload. (for … to …)

Grammar: Modal Auxiliaries
Scientific texts use constructions with modal auxiliaries, also called ‘modals’, e.g. when the texts are about a potential future development or when hypothetical statements are made.

Formation and Use of Modal Auxiliaries

- Modals require the verb in the infinitive.
  Solar energy could significantly reduce consumption of oil in coming decades.
- Modals do not add do/does/did in questions or in negative sentences.
  Fuel cells may not provide enough energy to sufficiently reduce fuel consumption.
- Modals have no past or future form (except for could and would).

Modals and their Meanings

- **can** and **could** express
  the ability and the permission to do sth, cf. to be able to and to be allowed to;
  a request, offer, suggestion, possibility, where could is more polite
- **may** expresses the possibility and permission to do sth; a polite suggestion
- **might** expresses a possibility (less possible than may) and a hesitant offer
- **must** expresses a force, necessity, an assumption, an advice, a recommendation;
  but **must not** expresses prohibition (!)
- **need not** expresses that there is no necessity to do sth
- **shall** expresses a suggestion
- **ought to** and **should** express an advice, an obligation
- **will** expresses a wish/request/demand/order (less polite than would); a prediction/assumption, promise, spontaneous decision, habits
- **would** expresses a wish/request (more polite than will), habits in the past
Fill the gaps with modals. Several modals may apply, depending on the intention you want to express. Remember to use the passive voice when necessary.

The term smart ____________________________ (apply) to rather sophisticated systems.
Viscosity _______________________________(change) when applying an electric or magnetic field.
Materials _______________________________ (make) that bend, expand or contract when a voltage is applied.
Recyclable materials __________________________ further________________________ (develop).
Materials for more efficient fuel cells __________________________(be) still _____________ (find).
Nanotubes ____________________________________________ (be) applicable in many ways.
The ecological impact of manufacturing materials __________________________ (consider).