Web of Science

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Web of Science also allows you to examine citation references to determine how often a particular author, article or journal has been cited within Web of Science. While this will not give you citation information for journal outside of the database, it is a good place to begin your assessment of the importance of the publication.

Searching

The basic search in Web of Science allows you to combine terms and select fields to better narrow your search. If you are interested in creating a specific search string, you will want to use the Advanced Search link.

There is a range of fields you can search including topic (or keyword), title and author. You can also mix the terms using the Boolean operators available to you. Finally, you can limit your search to a specific time span.
**Advanced Search**

In contrast to many databases where you enter entire Boolean search strings in the basic search window, in Web of Science you use the Advanced Search link.

**Fields and operators that can be used to build search string.**

On the right, you’ll notice a list of searchable fields and the bottom of the screen allows you to further limit your search by time span, database or language. You could also choose to run previous searches that you may have saved.

**Search Rules**

Capitalization does not matter. Apostrophes are not searchable characters.

Phrase searching (placing quotation marks around terms) is useful when searching for an exact phrase such as “chemical reaction” instead of searching chemical AND reaction, which will look for the terms in the article but not necessarily as a phrase. They may not even appear near each other. Phrase searching is not applicable in the author field. In Web of Science, stopwords found between quotation marks will be replaced with any word in that position (e.g. “person with cancer” will return results such as “person having cancer,” “person experiencing cancer,” etc.).

Words containing hyphens will be interpreted as an exact phrase (e.g. waste-water will search for the waste-water or the phrase “waste water.”

Wildcards (* ? $) can be used in fields that allow words and phrases, and there are two different wildcards that can be used independently or together. Wildcards cannot be used at the beginning of a word (*ology) or in a publication year search (200*). Three letters must appear...
before the wildcard for it to work when searching the Topic or Title field. All other fields must have one letter preceding the wildcard.

- The asterisk (*) represents any number of characters including no characters at all.
  ex. environment* matches:
    - environment
    - environments
    - environmental
- The question mark (?) represents any single character.
  ex. wom?n matches:
    - woman
    - women
- The dollar sign ($) represents zero to one character.
  ex. colo$r matches:
    - color
    - colour

Take care when using wildcards as you may not want to use one with all searches. For instance, when looking for singular and plural forms of a word, you might receive fewer results by searching for the terms instead of adding a wildcard.

Boolean operators can also be used. The operators available are:

- AND: all terms in the search appear in the results
- OR: at least one term in the search appears in the results
- NOT: excludes terms from the search
- (): groups words and phrases to show a relationship and the order in which you would like the search to be performed
- SAME: searches for terms that appear in the same sentence

If parentheses are not used, the terms will be processed in order of precedence:
1. SAME
2. NOT
3. AND
4. OR
Results

Once you’ve run your search, you will be taken to your results list. On the left, there is a pane with expandable limiters that you can use to further refine the results.

At the top of the results list, there is a link for exporting your results to a bibliographic software like EndNote. Simply mark the results you would like to export, and click the link at the top.

For more information about the article, including an abstract, click on the hyperlinked title. You will be taken to a complete record, which will also allow you to export the information to EndNote, see a list of the references, and consult related articles.
Studying the effects of hydrogen addition on the second-law balance of a biogas-fuelled spark ignition engine by use of a quasi-dimensional multi-zone combustion model

Abstract: Although a first-law analysis can show the importance of hydrogen addition impacts on the performance of a biogas-fuelled spark ignition (SI) engine, additional benefits can be revealed when the second law of thermodynamics is brought into perspective. It is theoretically expected that hydrogen enrichment in biogas can increase the second-law efficiency of engine operation by reducing the combustion-generated irreversibilities, because of the fundamental differences in the mechanism of exergy generation between hydrogen and traditional hydrocarbon combustion. In this study, an experimentally validated closed cycle simulation code, incorporating a quasi-dimensional multi-zone combustion model that is based on the combination of turbulent entrainment theory and flame stretch concepts for the prediction of burning rates, is further extended to include second-law analysis for the purpose of quantifying the respective improvements. The analysis is applied to a single cylinder homogeneous charge (HCCI) engine, fuelled with biogas-hydrogen blends, with up to 15 wt% hydrogen in the fuel mixture, when operated at 1500rpm, wide-open throttle, fuel-air equivalence ratio of 0.9, and ignition timing of 30 degrees crank angle before top dead centre. Among the major findings derived from the second-law balance during the closed part of the engine cycle is the increase in the second-law efficiency from 45.25 per cent to 42.41 per cent with hydrogen addition, accompanied by a simultaneous decrease in the combustion irreversibilities from 18.25 per cent to 17.18 per cent of the total availability of the charge at intake valve closing. It is also illustrated how both the increase in the combustion temperature and the decrease in the combustion duration with increasing hydrogen content result in a reduction in the combustion irreversibilities. The degree of thermodynamic perfection of the combustion process from the second-law point of view is quantified by using two different defined combustion exergy efficiencies, whose maximum values during the combustion process increase with hydrogen enrichment from 79.70 per cent to 83.45 per cent and from 86.01 per cent to 87.33 per cent, respectively.

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