

# Open web-based databases for defects in semiconductors

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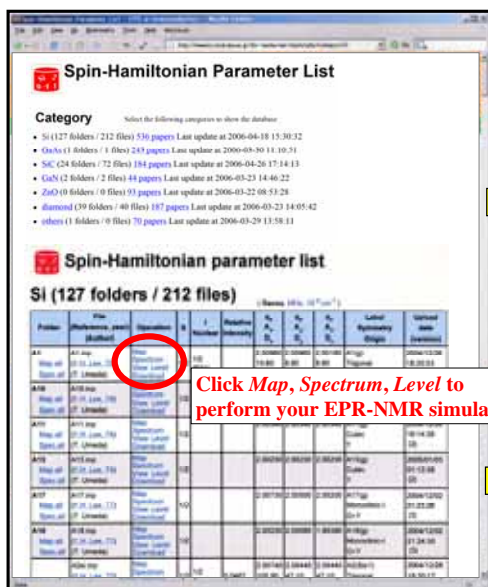
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**Abstract:** We developed web (world wide web)-based databases for defects in semiconductors. Two databases, “EPR in Semiconductors” and “Defect Dat@base” are now opened on <http://www.kc.tsukuba.ac.jp/div-media/epr/>. Both the databases can be operated via Internet (simply using a web browser), and also new data can be uploaded to the databases by any researcher in the world. All functions of the databases are available free of charge. This system is expectedly very useful to create a common knowledge source about defects in semiconductors. Please try the databases from your PC.

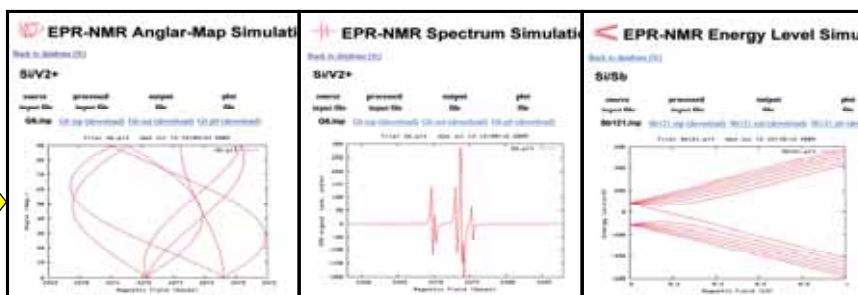
**EPR in Semiconductors** stores a number of records for EPR (electron paramagnetic resonance) centers in semiconductors. Approximately 300 records are now given. New EPR data can be uploaded via Internet (see Appendix 1 for uploading new EPR data).

This database accumulates fundamental EPR data, the so-called Spin-Hamiltonian (SH) parameters. Using these data, we can simulate EPR spectra for any experimental conditions. Thus, it is a very useful database to accumulate research data obtained by EPR. Please refer to related important works and the concept of the database in T. Umeda *et al.*, “A web-based database system for EPR centers in Semiconductors”, *Physica B* 376-377, 249-252 (2006).

<http://www.kc.tsukuba.ac.jp/div-media/epr/>



Click Map, Spectrum, Level to perform your EPR-NMR simulations.



### Simulation powered by EPR-NMR©

Using stored records, everyone can try very powerful EPR simulations (angular map, EPR spectrum, and spin levels, see above) powered by the EPR-NMR© simulator.

EPR-NMR© (Win/Mac/UNIX) has been developed by Prof. J. A. Weil's laboratory (University of Saskatchewan, Canada, <http://chem15127.usask.ca>). We greatly appreciate his group for the permission of our usage on the web site.

### Numerical / keyword search

Numerical search for SH parameters is available.

\*Main interface (SH parameters list + functional buttons)



<http://www.kc.tsukuba.ac.jp/div-media/papersDB/>



**Defect dat@base** provides a large knowledge of defects in semiconductors obtained by *any experimental / theoretical methods*. Approximately 1300 scientific papers (published in 1953-2006) are now collected, and each of them is characterized by special “**Tags**” (see below). Anyone can upload new papers (and update their *Tags*) to the database via Internet (see Appendix 2 for uploading new papers).

The database gives a bibliographic information and *Tags* for each paper. When one needs PDF files of papers, please download them in journal's homepages. Please note that we cannot distribute those PDF files due to the copyright issue.

### Tags: an excellent guide by experts

For each paper, *Tags* (three types: *material Tags*, *technique Tags*, and *details Tags*) are given by those who well know about the content of the paper (e.g., authors of the paper). These tags are chosen as they appropriately represent research results in the paper; in other words, they represent a knowledge of experts. Therefore, *Tags* will guide us excellently to the field of *defects in Semiconductors*.



\*Main interface (list of papers + Tag menu)