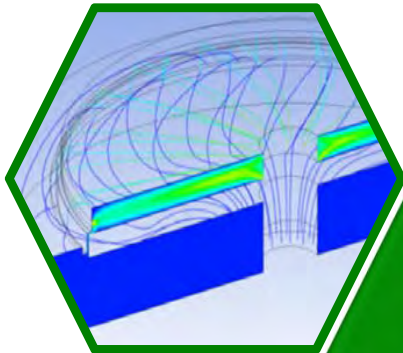


Fundamental Technology Assistance

Analysis & Physical Properties Center

Computational Science and Technology Information Center



Computing Science

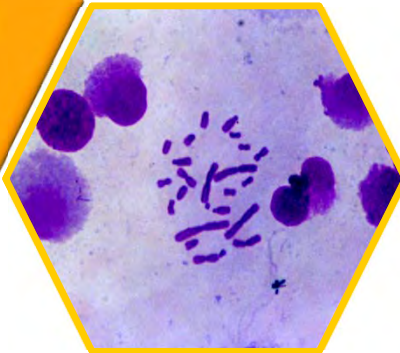
Chemical Analysis / Structure Analysis



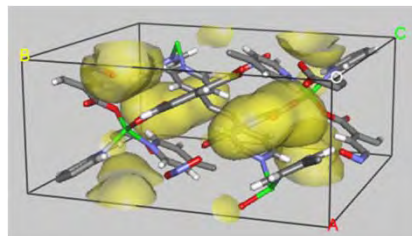
Safety Evaluation

Business Assistance

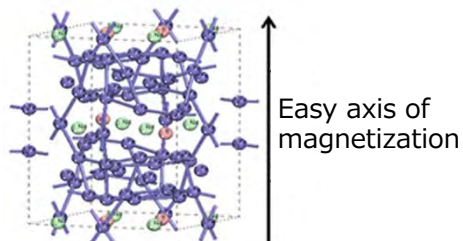
Safety Evaluation Center



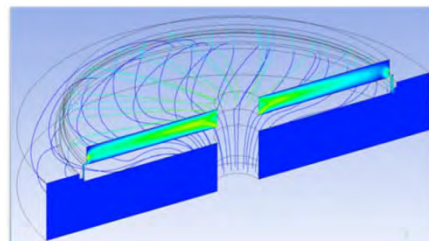
Product example



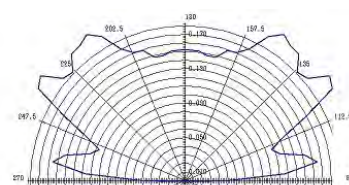
Petrochemicals, high-function chemicals



Magnet alloys



Power semiconductors



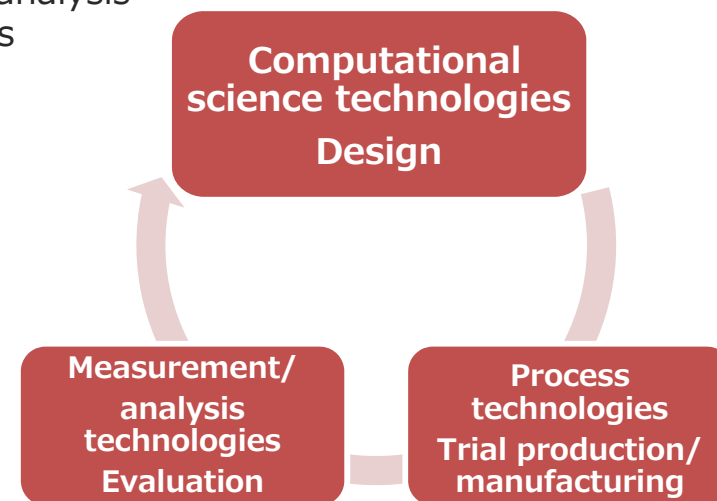
Light distribution

Plant growth facilities/LED

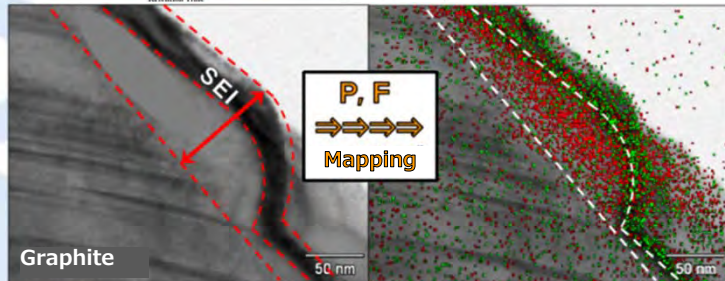
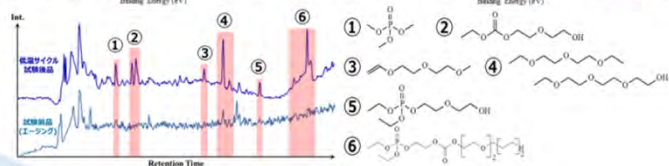
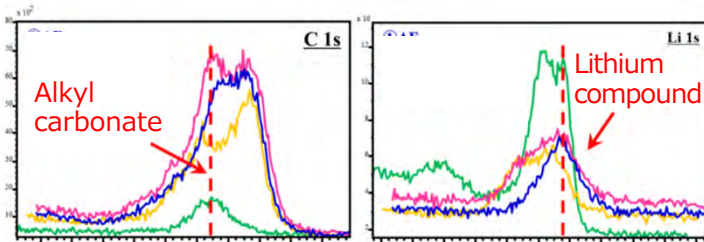
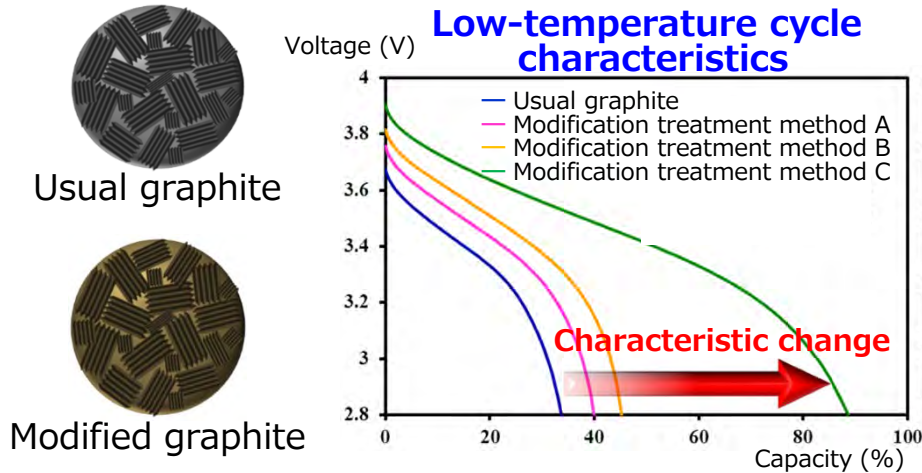
Our technologies

Using various computational science technologies, we can enhance and accelerate product development and rapidly produce characteristic products.

- Quantum chemistry calculation
- First-principles calculation
- Molecular dynamics calculation
- Thermal stress analysis
- Fluid analysis
- Micromagnetic simulation
- Chemical reaction simulation
- Lighting design analysis
- Electromagnetic wave simulation
- Electron transport calculation
- Heat transfer analysis
- Image analysis



Product example



Confirmation of the correlation of SEI (degraded material coating) with battery characteristics

Our technologies

- Inorganic chemical analysis**
 Trace impurity analysis, High-precision principal component analysis
 Equipment owned: ICP-OES, ICP-MS, etc.
- Organic chemical analysis**
 Molecular structure analysis, Separation analysis, Thermal analysis
 Equipment owned: FT-IR, NMR, GC-MS, etc.
- Structure analysis**
 Microstructural (μm to nm) analysis, Composition analysis
 Equipment owned: TEM, SEM, XRD, XPS, etc.

Various non-atmospheric exposure analyses

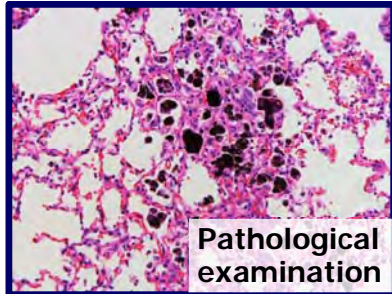


Product example

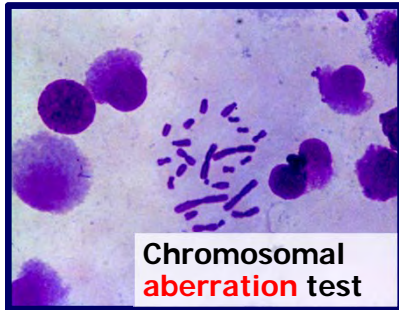
Our technologies

R&D/Manufacturing/Sales

Safety information

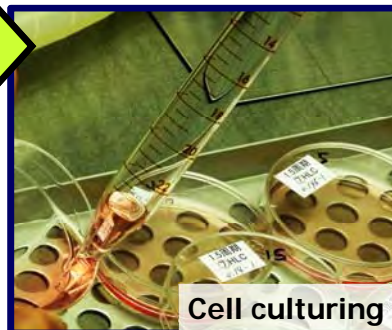


Pathological examination



Chromosomal aberration test

Various requests



Cell culturing

● Safety test

- Conduct safety test, conduct study test.
- Manage and comment on tests.
- Manage company-wide test results.

● Toxicity information research

- Search, report, and comment on hazardous information.

● Research of laws and regulations on chemical substances, etc.

- Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.
- Industrial Safety and Health Act
- Existing/new chemical substances
- Others: Research of laws and regulations in Japan and abroad

● Support for SDS creation, etc. and confirmation

● Education, public awareness activities, etc.

● Others: Consulting

Contribution to society

Up-to-date information

- Policymaking assistance
- International standardization
- Latest trends of laws and regulations
- Appropriate evaluation/control method of chemical substances

- JCIA
- NBCI
- OECD/BIAC
- METI
- MHLW
- MOE
- AIST
- ISO-related activities
- Others

We test and investigate the effect of products developed by Showa Denko Group on human health and environmental organisms in order to provide basic data for risk evaluation, thus helping customers to use our products safely.