

## Combinatorial Science and Technology for Discovery of Novel Functional Materials

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Combinatorial methods are now being widely spread to develop advanced functional materials for catalysis, fuel cell, polymers, electronic device, sensors and display etc. If these exists a huge experimental variable space, millions of samples should be rapidly prepared, characterized and evaluated to find the quantitative structure-activity relationship. Library work-up and library design should be done by data mining and artificial intelligence. We have developed the instruments for high-throughput screening of catalysts and advanced materials. The brief outline of SUPER-I, SUPER-II (Speedy Ubiquitous Parallel and Economic Reactor), PolycatAccelerator, Combi Accelerator I and II, LSMCD-Explorer, and Micro-Multi Spectrometer will be discussed. Several examples of applications of these instruments to develop novel materials will be also elucidated.