

Control by design – Design procedure of micro chemical plants

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It is difficult for micro chemical plants to install monitoring devices and controllers after the construction of the plants. It means that the control problem has to be considered at the design stage. In this lecture, the design and control problems of micro chemical plants are explained according to the design steps of micro chemical plants. The first step is the design of a single channel. How to optimize the shape of the channel is explained using examples. Many channels are installed in parallel in a device to increase the production rate. The design procedure of a device considering the robustness of the operation is explained next. The blockage is one of major troubles to be overcome for realizing long-term operation of micro chemical plants. The smart flow distributor that can detect the blockage of one of the parallelized devices is explained, and the operation procedure that the blockage does not affect the flow condition is demonstrated.