

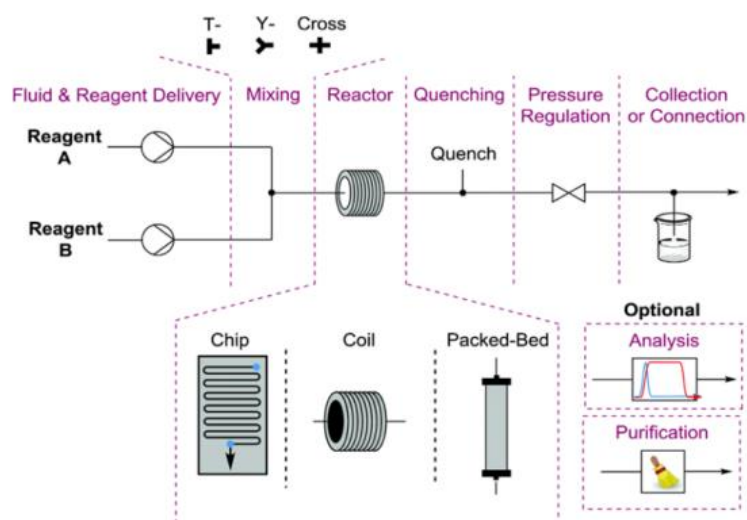
Flow Chemistry & Constant Flow Syringe Pump

Introduction

Flow chemistry replaces flasks with fluids: traditional batch processing experimental equipment is replaced with flow chemistry equipment that processes continuous reactants and production streams. With the continuous development of new flow chemistry equipment, it is increasingly favored by researchers for its cost advantages, speed, and strong safety. Flow chemistry also has a stronger appeal to many laboratories.

In this article, we will briefly learn about flow chemistry and the fundamental components of flow chemistry equipment system.

What is Flow Chemistry?



Flow chemistry refers to the technology of transporting materials through **pumps** and conducting chemical reactions in a continuous flow form. Flow chemistry not only refers to the flow of materials, but also combines emerging technologies such as Microreactors, Microfluidics, Lab-on-a-chip, and Online real-time detection.¹ Although this production method of completing chemical conversion during the flow process has been widely used in large chemical fields such as petrochemicals and synthetic ammonia, the concept of "Flow Chemistry" is relatively new. It mainly covers the application of small-scale continuous chemical reactions in the laboratory, with characteristics such as small volume, low energy consumption, and high yield. It has now been widely used in research and production fields of

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chemistry, biology, pharmaceuticals, energy and environment, with a great development prospect.

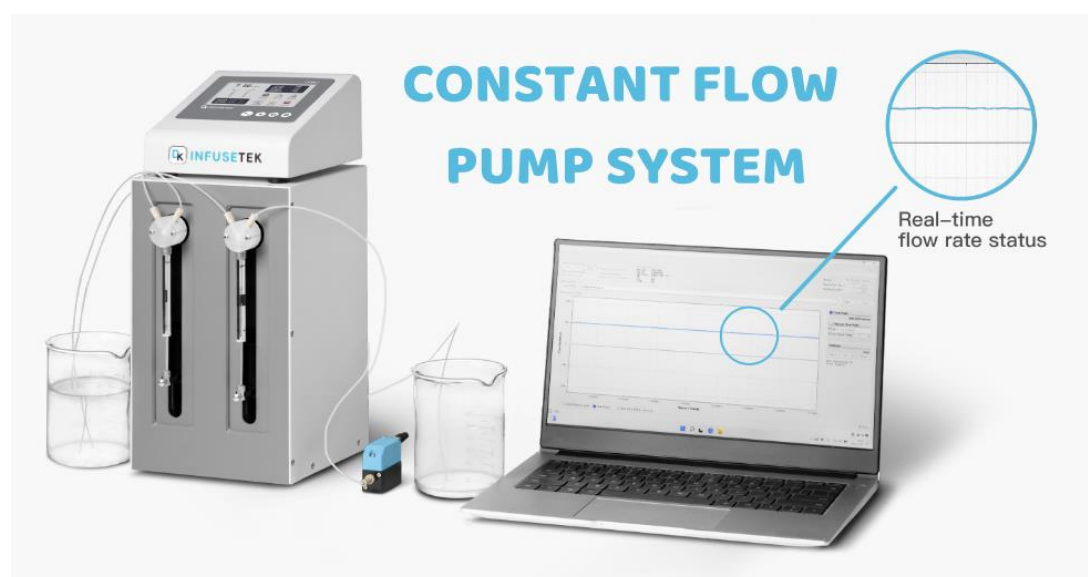
Compared to traditional kettle reactors, microreactors are suitable for rapid reactions with intense heat release, unstable reactants or products, strict requirements for reactant ratio, solid generation reactions requiring uniform distribution of nanomaterials and product particles, and with excellent enhanced transport performance.

They can safely achieve more stringent reaction conditions to achieve a new type of reaction window under high temperature and high pressure. Therefore, flow chemistry system has many advantages such as improving reaction time, precise temperature control, multi-step synthesis, and increasing selectivity. ²

Flow Chemistry Equipment

Flow chemistry equipment is usually modular, and the flow process can be divided into six basic parts: Fluid/reagent delivery, Mixing, Reactor, Quenching, Pressure regulation, Collection, and two optional parts: Analysis and Purification.

The primary component of a flow chemistry equipment system is the **pump** used to transport fluids or reagents. Next, these materials will be **mixed** and enter the **reactor** module, which is part of the flow chemistry system that undergoes chemical reactions. The reactor module is directly connected to the **quenching** device that stops the material from reacting, allowing for precise control of residence and reaction time. High pressure is very easy to achieve in flow systems, and **pressure regulating** devices are used to perform this task. This is an essential flow chemistry equipment, usually located in front of the final product **collection** area. In addition, this system may also have some additional optional devices, such as **analysis** and/or **purification** modules.



DK INFUSETEK provides the essential fluid delivery module for flow chemistry experimental systems, including various types of syringe pumps, especially our **CFSP constant flow pump** with reversing/ solenoid valves. The pump is easy to operate and set up, with multiple working modes. They can not only stably deliver fluids but also work under pressures up to 2Mpa, allowing them to be suitable for stable, accurate, and uninterrupted flow chemistry experiments. The pump can be integrated with various equipment, assist scientists in better completing researches in fields such as flow chemistry/ photochemistry/microfluidics, etc.

To find out more about our pumps for flow chemistry system, you can click [HERE](#). Alternatively get in touch with a member of the INFUSETEK team now – either by using the LIVE CHAT box at the bottom right of your screen, or by emailing us via sales02@infusetek.com, our sales engineer will get back within 24 hours.

References

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2. *Continuous reaction, Wang Shuhe explained clearly with a single article.*
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