

## Particle synthesis by (pH-dependent) precipitation reaction – Product recommendation

In numerous applications, particles with defined size, structure and surface represent important materials. Particularly in the production of heterogeneous catalysts or nanoparticles, precipitation reactions are carried out for particle synthesis. In the following, the most important influencing factors for a successful synthesis are presented.

### 1 pH-dependent precipitation reaction

In pH-dependent precipitation reactions, the following reaction parameters have a significant influence on particle properties (particle size, structure and surface area):

- > Molar ratios of the source materials
- > Temperature
- > pH value

For this reason, the exact control and recording of these parameters is essential in order to analyze their influence and thus make targeted changes.



### RECOMMENDED PRODUCTS

#### labworldsoft® 6 Reactor

/// Laboratory software

- > Automated reaction control and data storage
- > Reproducible reaction conditions

Ident. No.: 0020117504

#### HA.ep

/// External peristaltic pump

- > Automated liquid dosing and pH control through automation using labworldsoft® 6

Ident. No.: 0020101836

#### EasySyn 5000 Advanced

/// Reactor system

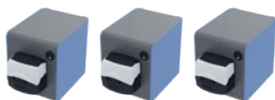
- > Precise temperature control due to double-walled reactor vessels and regulation by thermostat
- > Easy draining of the reaction solution by means of a bottom drain valve
- > Temperature measurement with PTFE-coated temperature sensor

Ident. No.: 0020113443

#### HRC 2 control

/// Circulator

Ident. No.: 0025004524





## 2 Filtration

Following particle synthesis, the particles are filtered and washed. By using a reactor vessel with bottom drain, the suspension of particles and reaction solution can be easily discharged into a filter frit. The filter frit is placed on a suction flask connected to a vacuum pump. The applied vacuum significantly accelerates the filtration.

## RECOMMENDED PRODUCTS

### VACSTAR digital

/// Vacuum pump

- > 4-chamber diaphragm pump with particularly chemical-resistant diaphragms
- > High suction capacity with low space requirement

Ident. No.: 0020016236

## 3 Drying

The filtered particles are then dried in a drying oven at a defined temperature for a defined time.

## RECOMMENDED PRODUCTS

### OVEN 125 basic dry

/// Drying oven

- > Universal drying oven for temperature control, drying, aging and heating tasks in the laboratory
- > Reproducible results due to precise temperature control

Ident. No.: 0020003215



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IKA-Werke GmbH & Co. KG

Janke & Kunkel-Straße 10, 79219 Staufen, Germany

Phone: +49 7633 831-0, eMail: [sales@ika.de](mailto:sales@ika.de)



[www.ika.com](http://www.ika.com)



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