



南京工业大学
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第二章 不溶物的去除—过滤

Chapter 2 Removal of insolubles—Filtration

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2.1 过滤的概念及预处理的几种方法

Filtration separates solid from a liquid by forcing the liquid through a solid support or filter medium.

This is a straightforward procedure for well defined crystals.

过滤是使料液通过固态过滤介质时，固态悬浮物与溶液分离

滤饼
cake

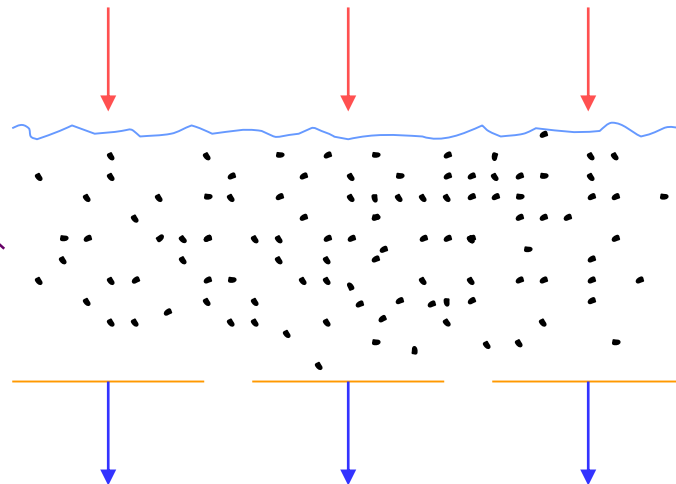


图 1 传统过滤
(Conventional filtration)

一. Pretreatment (预处理)



These treatments are also useful for centrifugation and sedimentation. 这些方法也适用于离心和沉淀。

Simple electrolytes（简单电解质）：

Simple acids and bases（简单的酸或碱）

Alum（明矾）

Ferric chloride crystals（三氯化铁）

pH与过滤体积的关系如图2

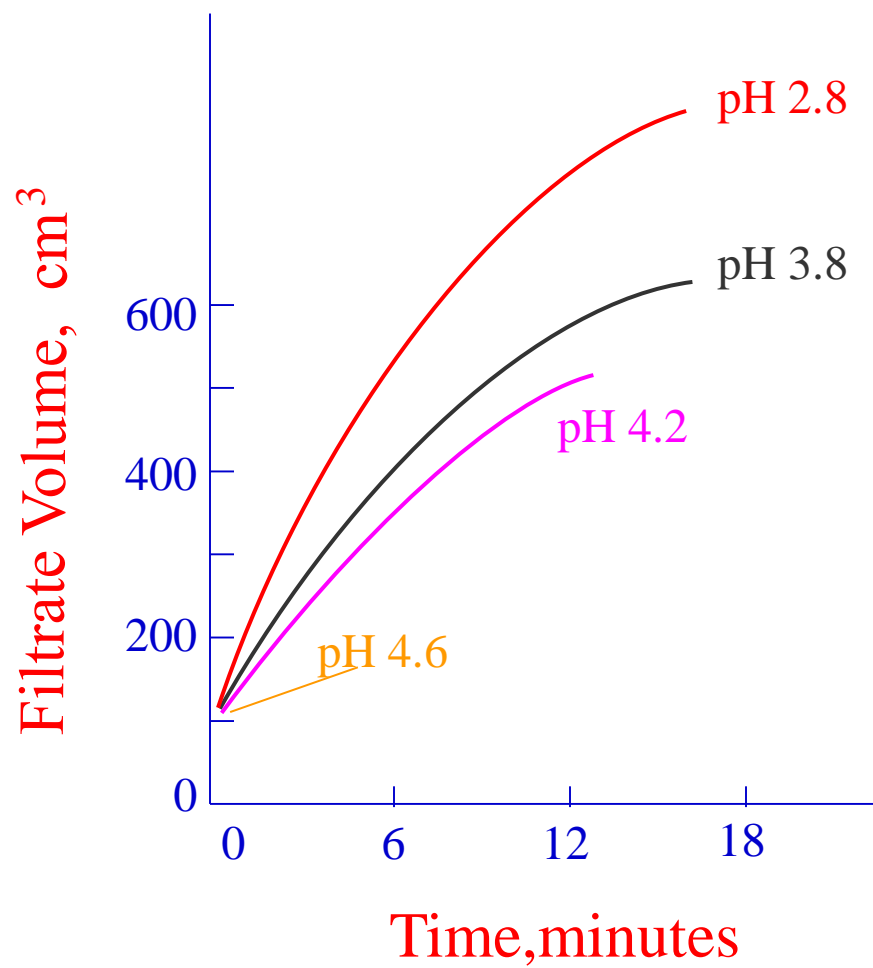


图 2 pH值对过滤体积的影响
(The effect on filtrate volume of pH)

Polyelectrolytes: anionic, cationic or nonionic
(聚合电解质分为阳离子型、阴离子型或非离子型)

Eg. Polyacrylamides (聚丙烯酰胺)

Polyethylenimines (聚苯乙烯)

Polyamine derivatives (多聚胺衍生物)

3. Filter Aids (助滤剂)

(1) Diatomaceous earths 硅藻土

- **Diatomaceous earths are the skeletal remains of tiny aquatic plants deposited centuries ago.**

硅藻土是百年前水生植物沉淀下来的遗骸。



未经处理的硅藻土



Diatomaceous earths
(提纯后的硅藻土)

(2) Perlites 珍珠岩

The perlites are volcanic rock processed to yield an expanded form.

珍珠岩是处理过的膨胀火山岩。



Perlites

珍珠岩

Table 1 Typical properties of Filter Aids

表1 典型助滤剂的种类

Grade	Density (kg/m ³)		pH	Water Adsorption (%)	Relative Flow Rate
	Dry	Wet			
<i>Diatomaceous Earths</i>					
Standard Super –Cel	130	280	7.0	260	200
512 Hyflo Super –Cel	140	280	10.0	250	500
535	190	280	10.0	250	1400
560	310	320	10.0	220	7500
<i>Perlites</i>					
Terracel 300	110	2602	7.5	-	300
Terracel 500	130	240	7.5	-	900