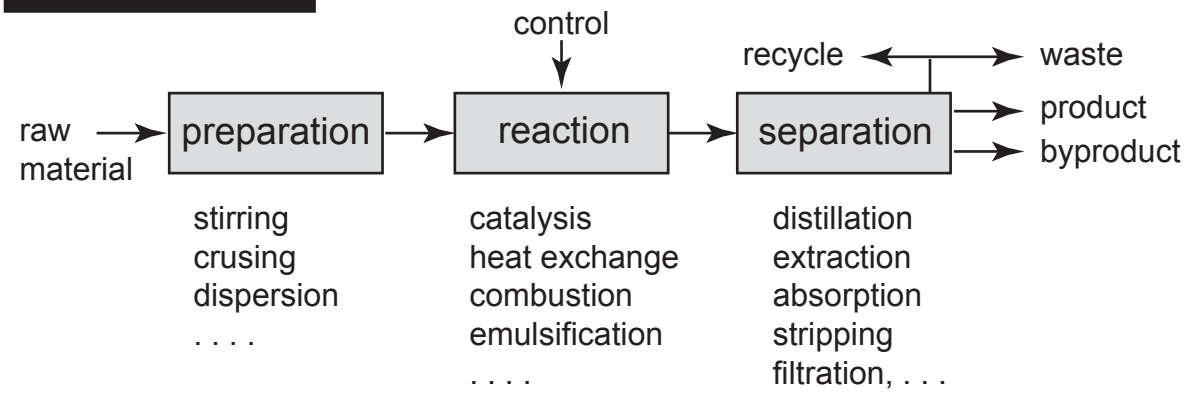
Development of chemical engineering

1900

a. industrial chemistry

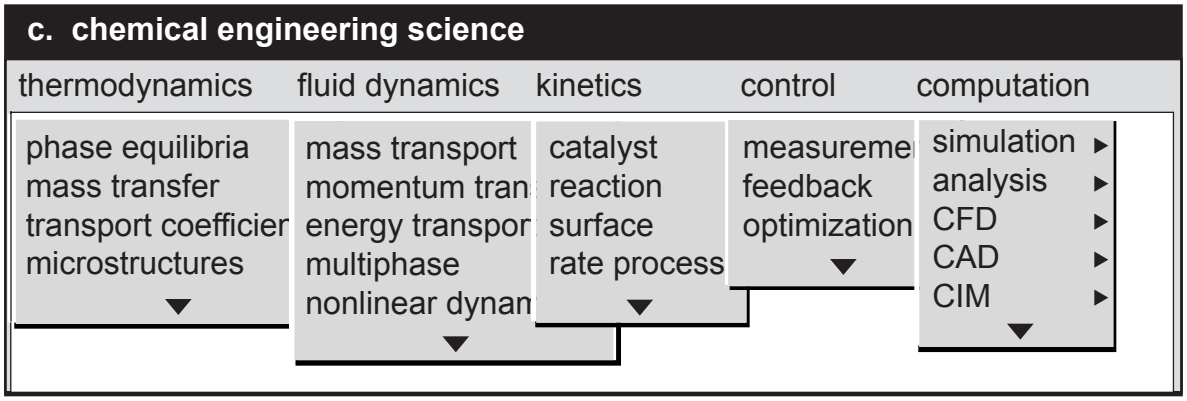
1925

b. unit operations



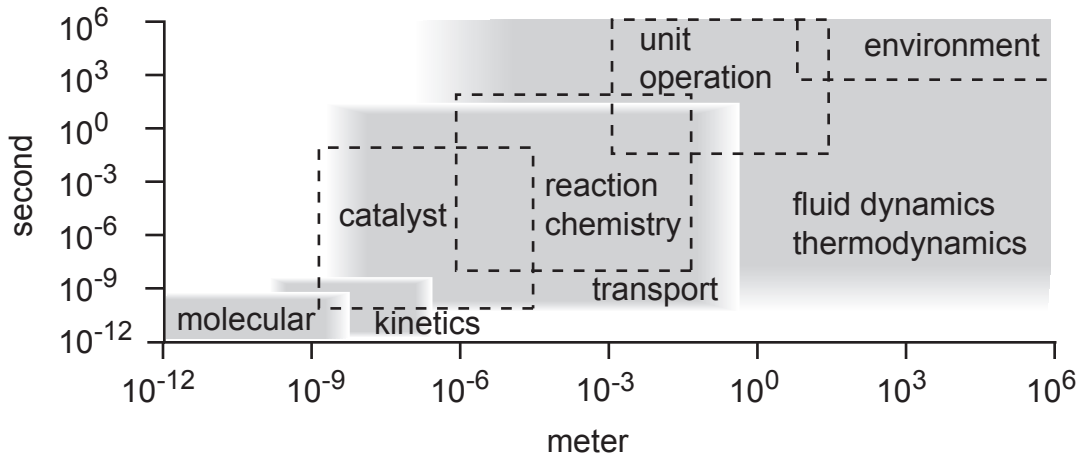
1950

c. chemical engineering science



1975

d. chemical systems engineering



2000

Evolution of chemical engineering with crude timeline: (a) Industrial chemistry treats detailed operations of individual chemical processes separately. (b) Chemical engineering considers not individual but typical processes, which is analyzed into stages, each with general types of possible units operations. (c) Engineering sciences fathom the physiochemical mechanisms that underlie unit operations. (d) Process systems engineering integrates phenomena in many scales and levels for comprehensive design of chemical processes.