



Institute of Chemical Engineering
POLISH ACADEMY OF SCIENCES

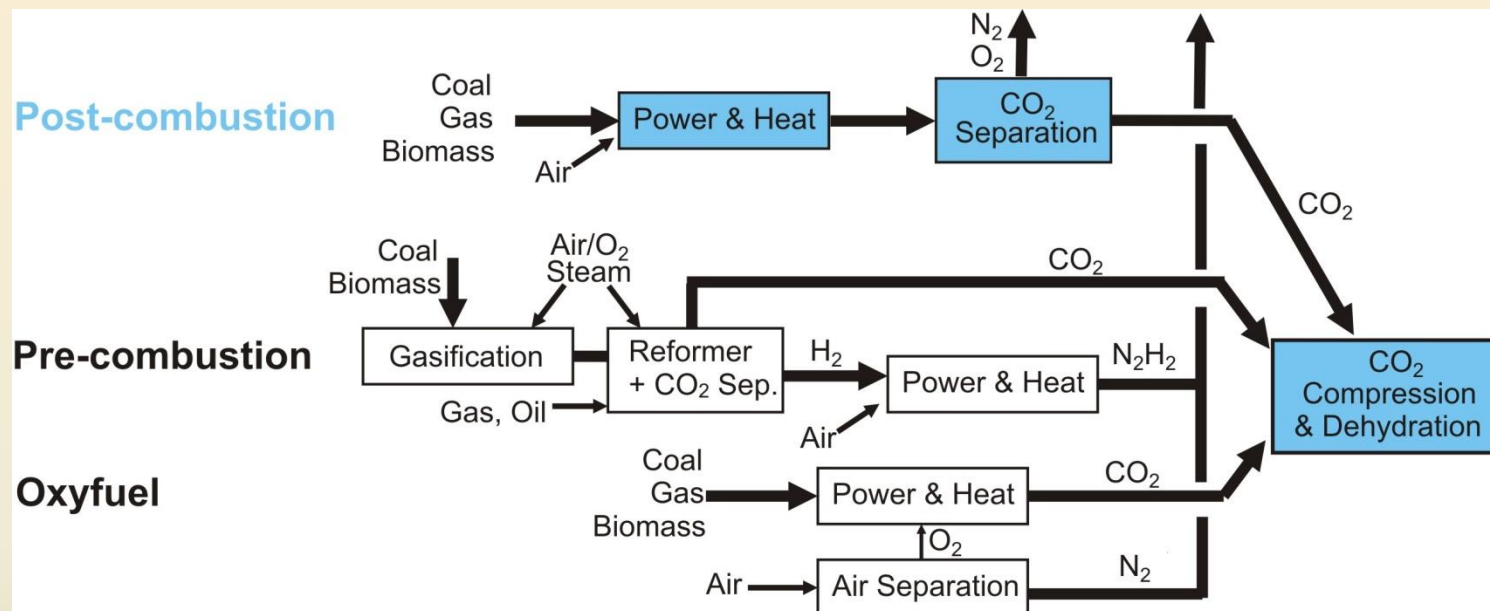
CURRENT TRENDS IN CO₂ CAPTURE

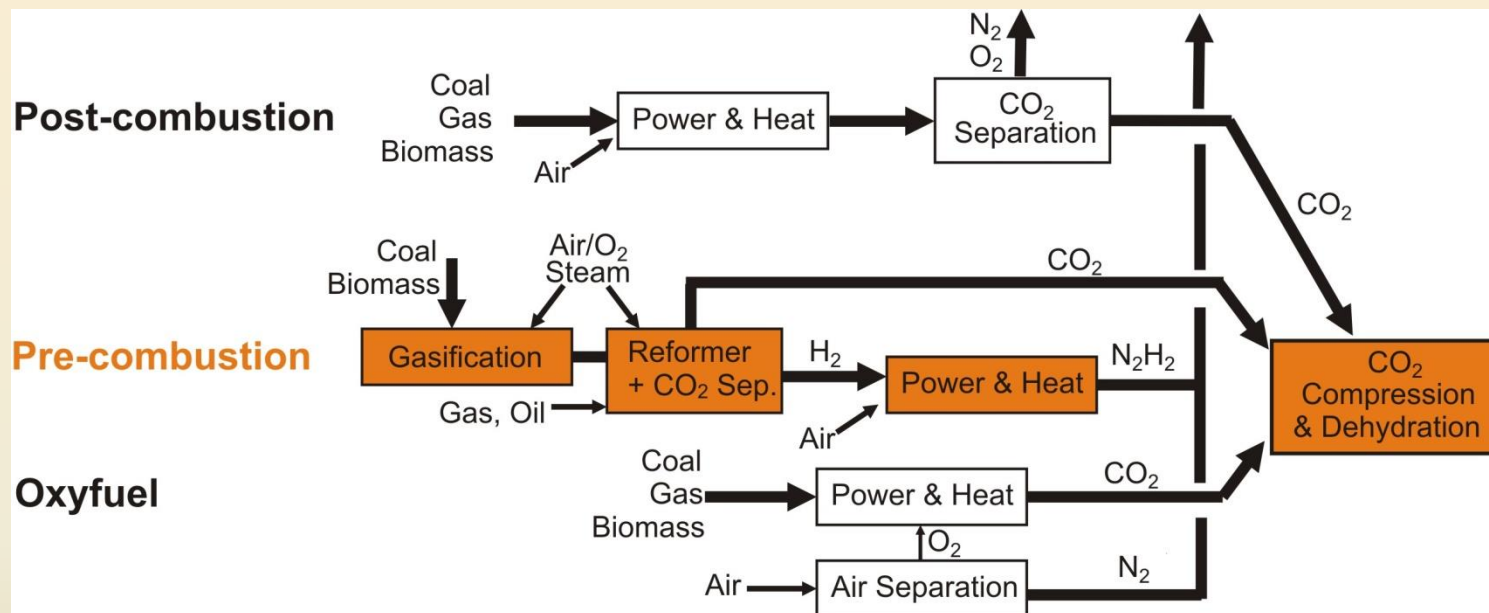
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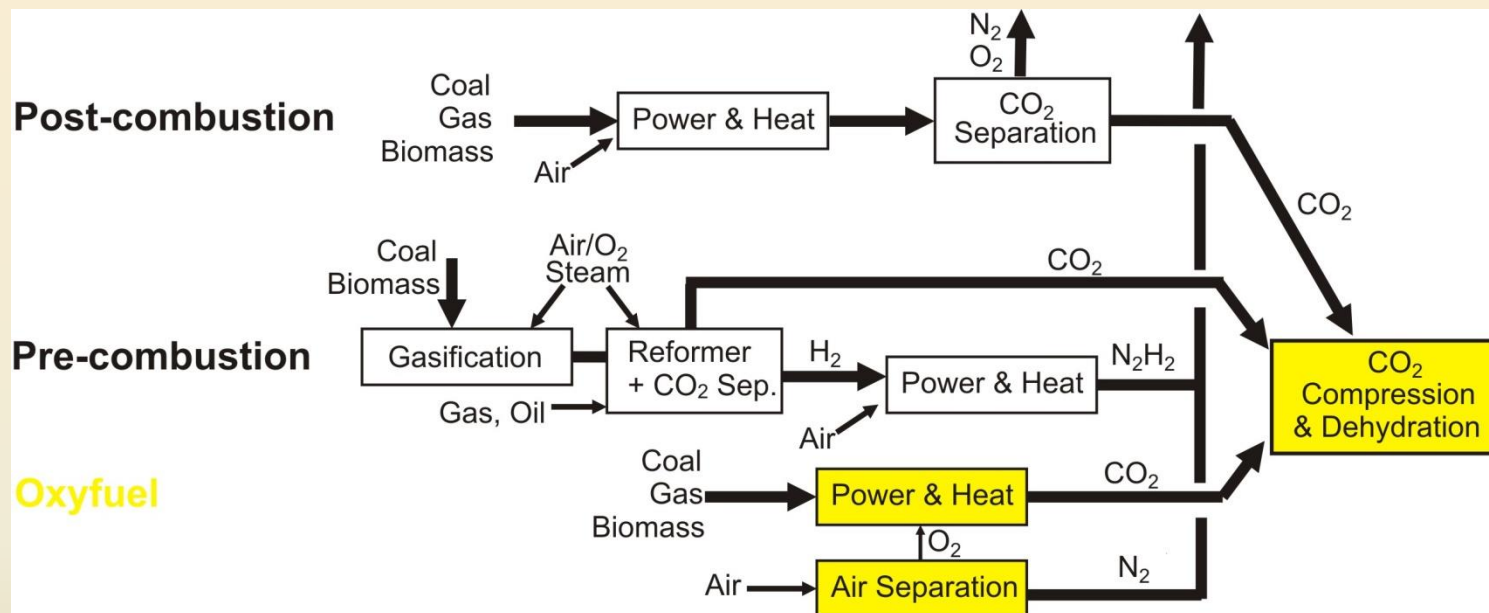


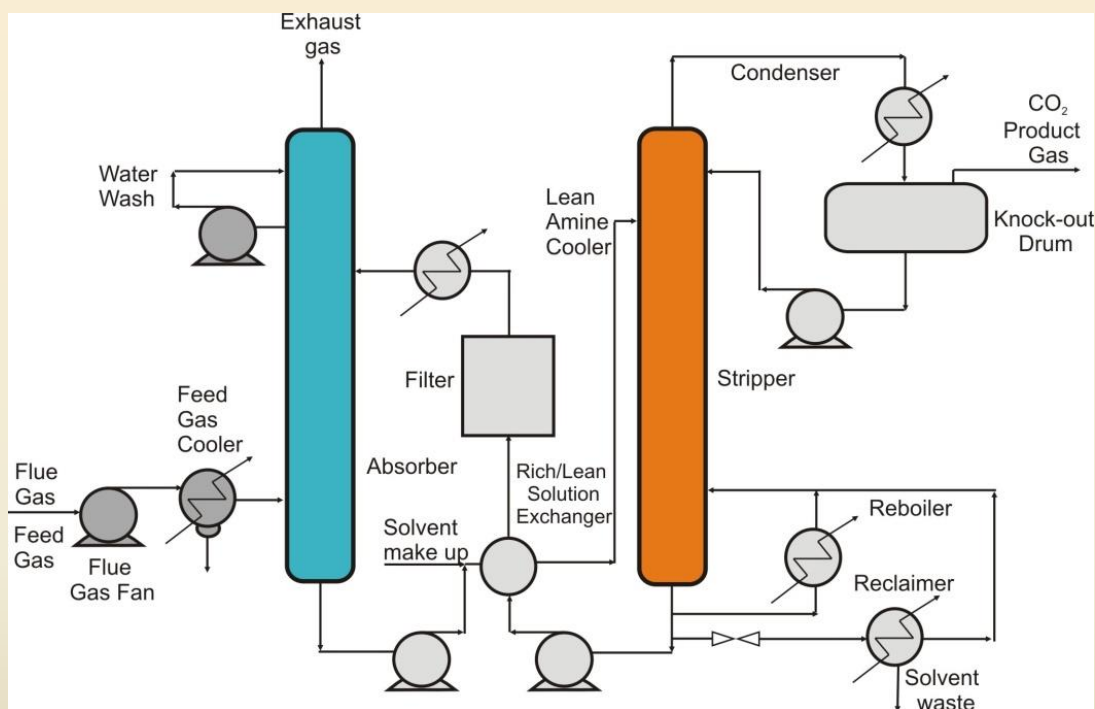
PRINCIPAL OBJECTIVE OF CO₂ CAPTURE:

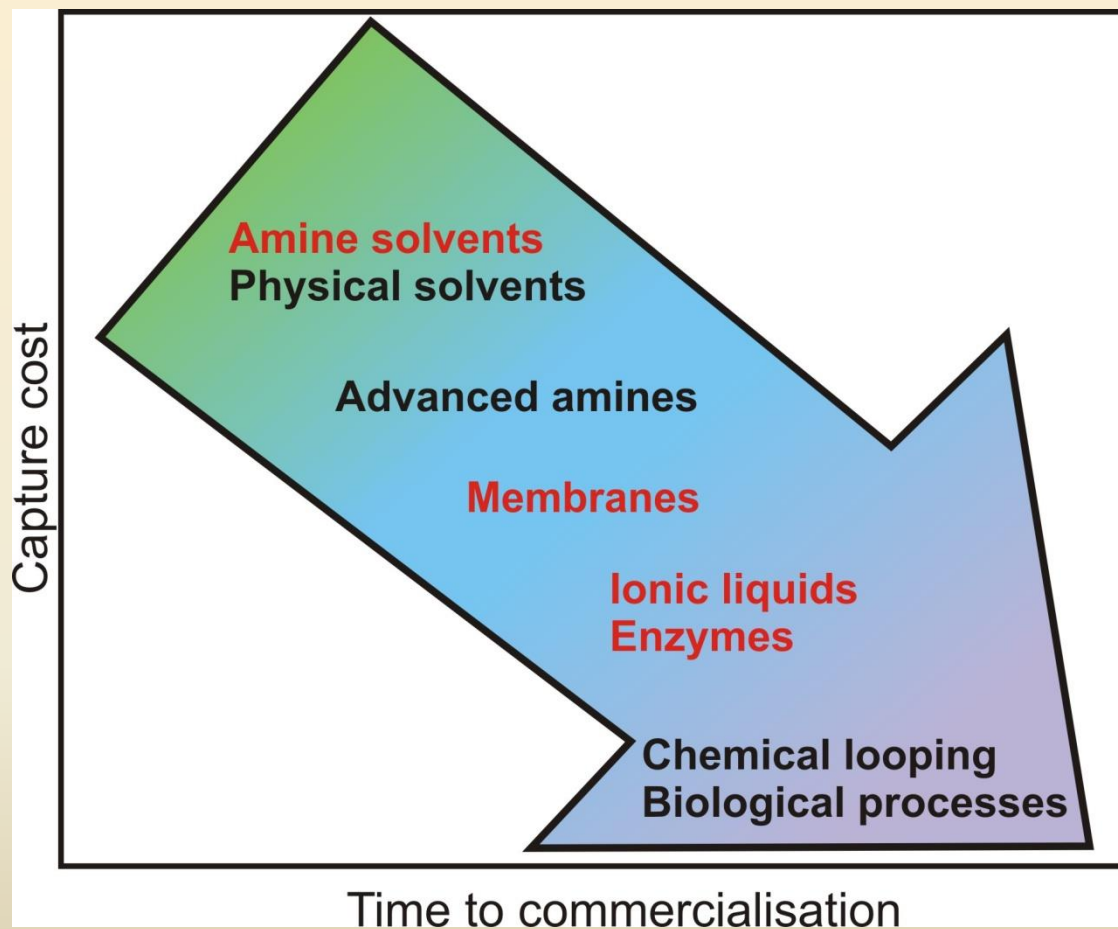
**TO PRODUCE A CONCENTRATED STREAM OF CO₂
THAT CAN BE UTILIZED OR TRANSPORTED TO
A STORAGE SITE**











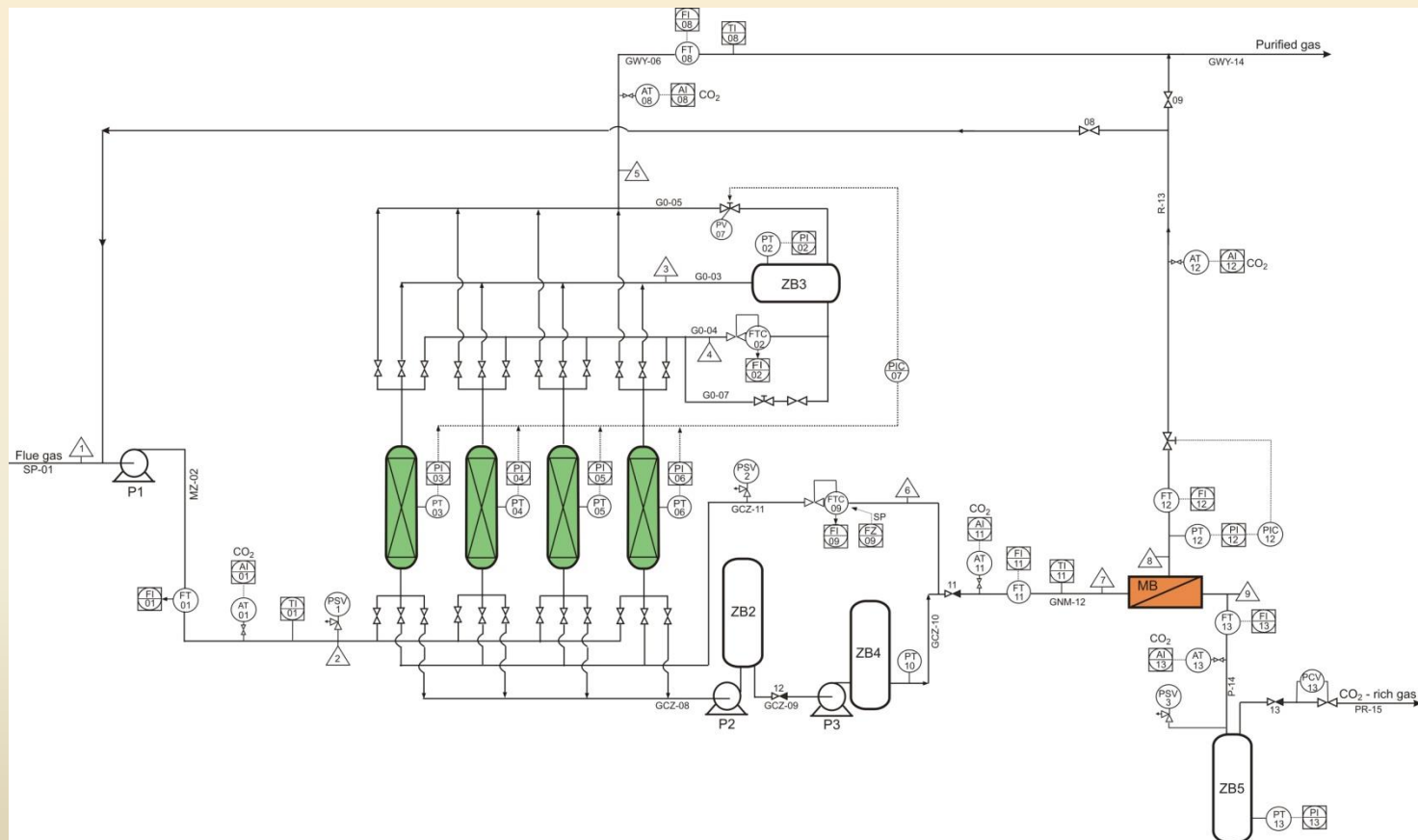


INNOVATIVE TECHNOLOGIES FOR POST-COMBUSTION CAPTURE

- **HYBRID (ADSORPTION + MEMBRANES)**
- **POLY (IONIC LIQUID) MEMBRANES**
- **ENZYME-ENHANCED ABSORPTION**

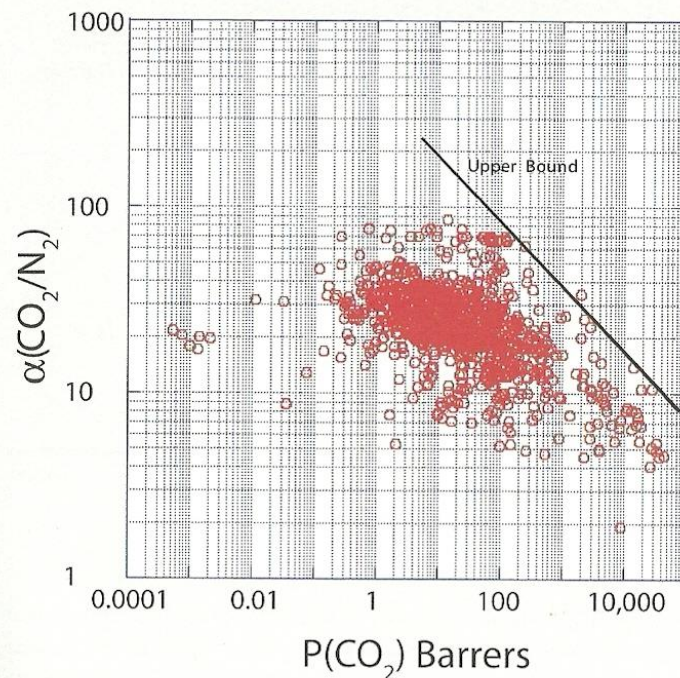


HYBRID SYSTEM



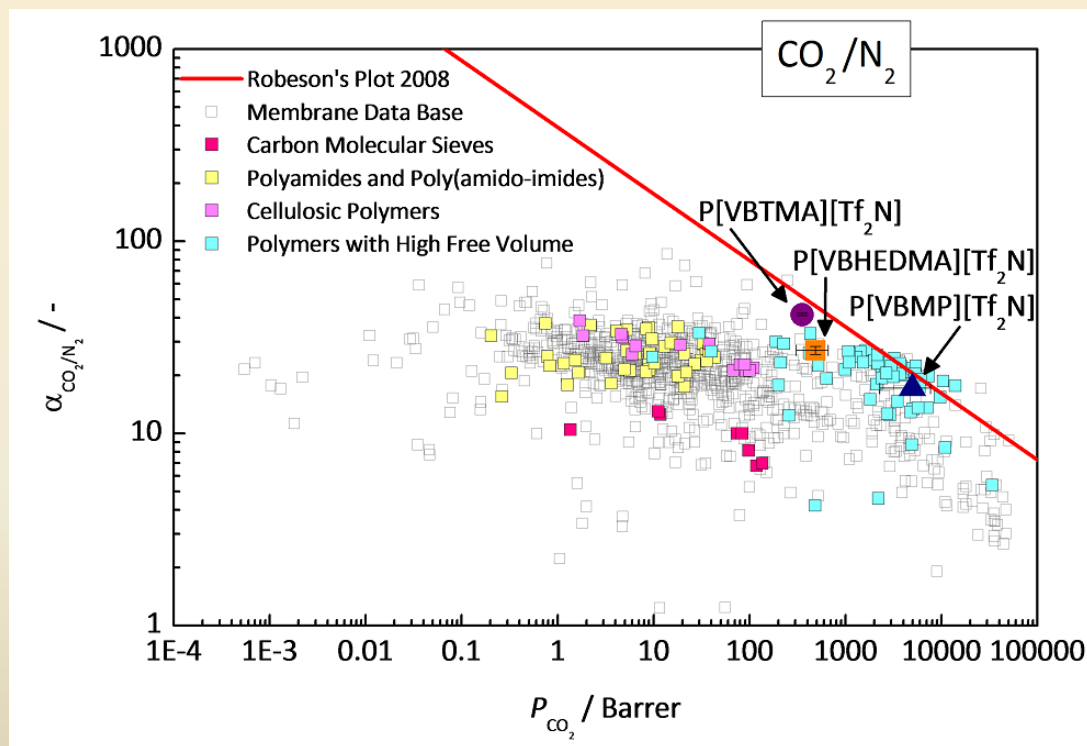


ROBESON PLOT FOR COMMERCIAL POLYMERIC MEMBRANES



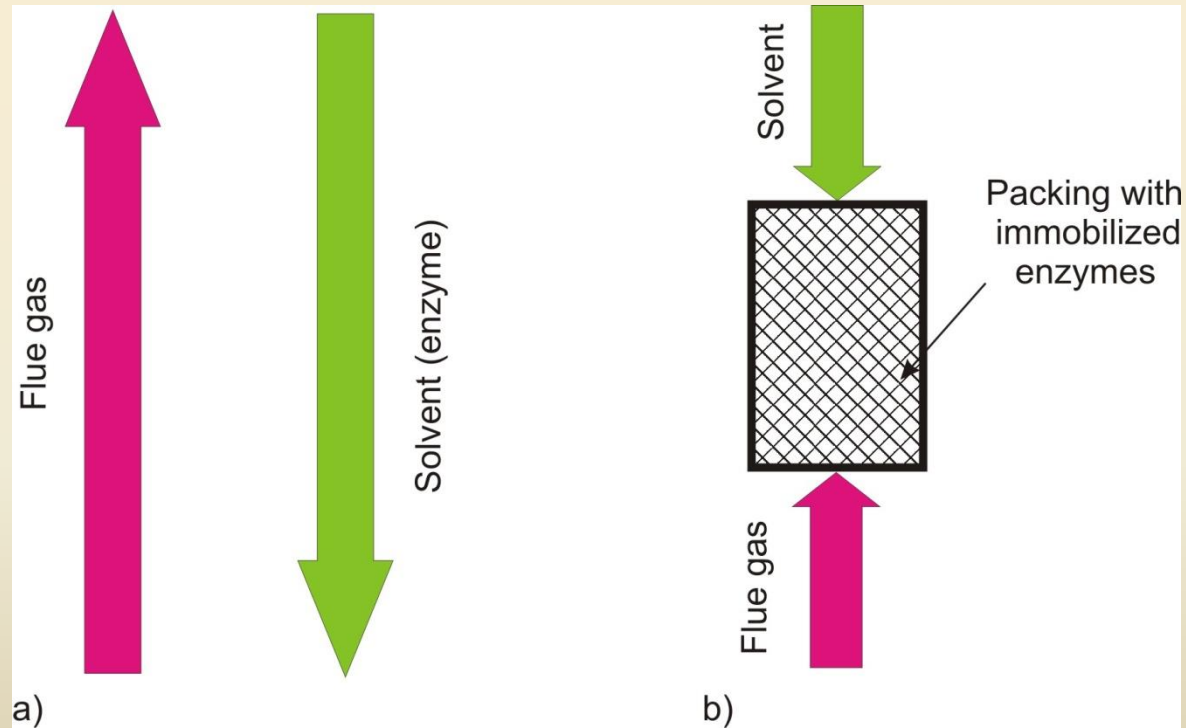


ROBESON PLOT FOR THE SELECTED POLY(IONIC LIQUIDS)





ENZYME-ENHANCED ABSORPTION



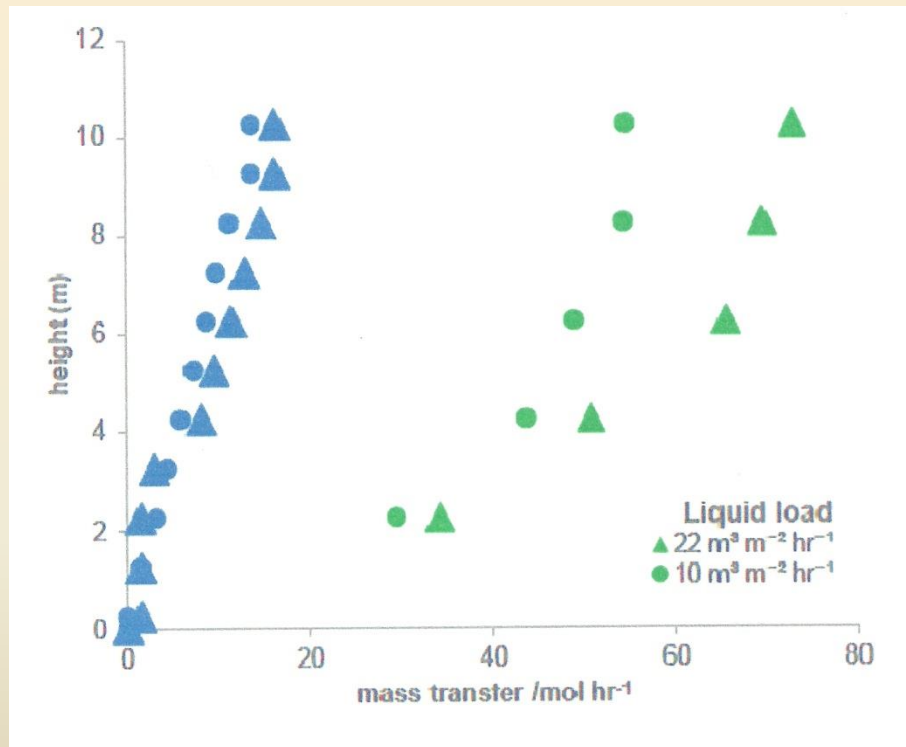


BOTTLENECKS

- **PROCESS SCALE-UP**
- **ENZYME SUPPLY**
- **ENZYME THERMAL STABILITY**
- **VULNERABILITY TO TRACE CONTAMINANTS**



RATE OF ABSORPTION IN ENZYME-ACTIVATED SOLVENT



blue symbols: 30% MDEA without CA

green symbols: 30% MDEA with CA



***MANKIND FACES A CROSSROADS. ONE PATH
LEADS TO DESPAIR AND HOPELESSNESS. THE
OTHER, TO TOTAL DESTRUCTION. LET US PRAY
WE CHOOSE CORRECTLY.***

Woody Allen



THANK YOU FOR YOUR ATTENTION