

	Reaction Fluxes (nu)	Enzymes (E)	Process Machineries (P)		Target Concentrations (TC) Target Molecules (TM) Target Reactions (TR)
Mass conservation	S	muC_E	muC_P		$\text{muC\_TC} \cdot \text{TC} + \text{C\_TM} \cdot \text{TM}$
Process Capacity		muPC_E	$\text{muPC\_P} - \text{diag}(k\_P)$	$= \mathbf{Aeq} = \mathbf{beq} = -$	$\text{muPC\_TC} \cdot \text{TC} + \text{PC\_TM} \cdot \text{TM}$
Flux Constraints	-1_TR				TR
Enzyme Capacity (sense)	I	$-\text{diag}(k^+\_E)$			
Enzyme Capacity (antisense)	-I	$-\text{diag}(k^-\_E)$		$= \mathbf{A} \leq \mathbf{b} =$	
Density Constraints		W_E	W_P		D - TC

**Blocks needed:**

S: stoichiometry matrix.

C\_E, PC\_E, W\_E, k\_E: composition, processing cost, weight and capacity of enzymes.

C\_P, PC\_P, W\_P, k\_P: composition, processing cost, weight and capacity of process machineries.

D: density limits for every compartment.

C\_TC: composition of molecules whose concentration needs to be kept at a certain value.

TC: vector of concentrations of molecules that need to be kept at certain value.

C\_TM: composition of molecules which are generated at a given flux.

TM: vector of fluxes of molecules.

1\_TR: indicator matrix of reactions whose flux is set to a fixed value.

TR: vector of set reaction fluxes.