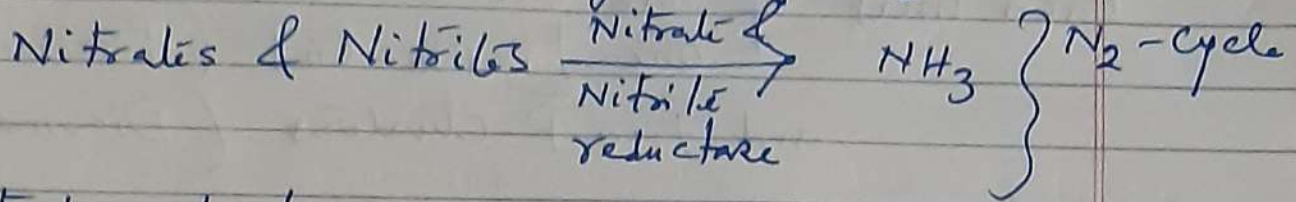


## Nitrogenase ( $N_2$ -ASE) in biological Nitrogen Fixation:-

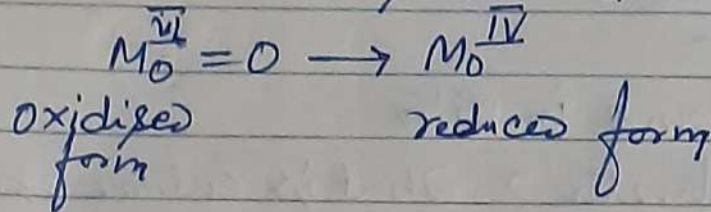
Mainly Mo and Fe metal containing enzyme } Basic point  
Some cases V instead of Mo.

i) Biological  $N_2$ -fixation is an important step in Nitrogen fixation cycle.

ii) Nitrogenase mainly occurs in prokaryotic cells of organisms such as bacteria and blue green algae etc.



Nitrate reductase  $\rightarrow$  Mo Containing enzyme

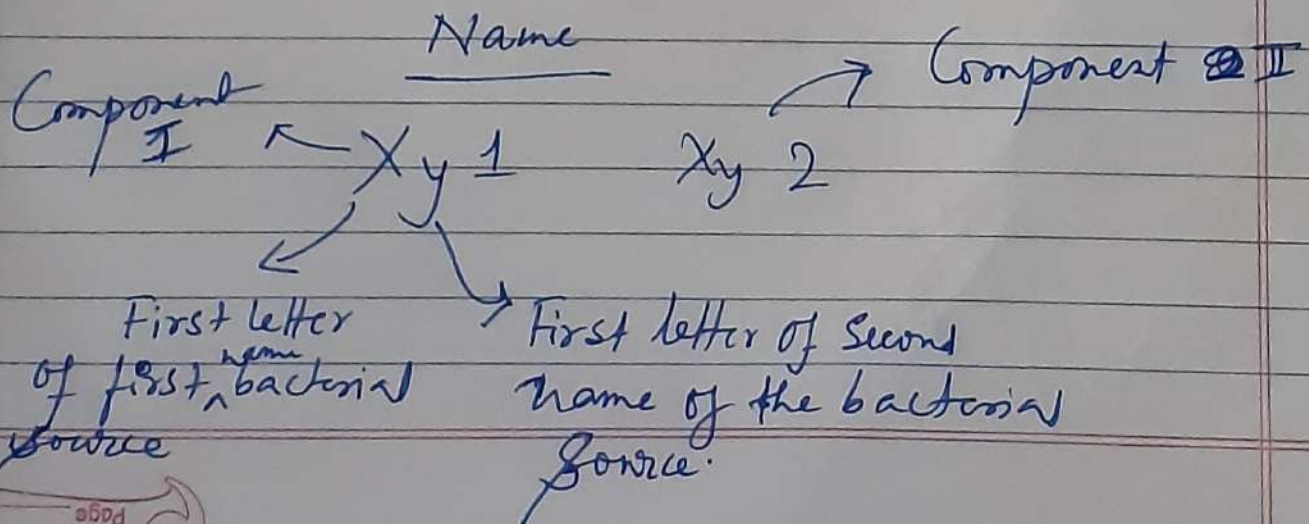
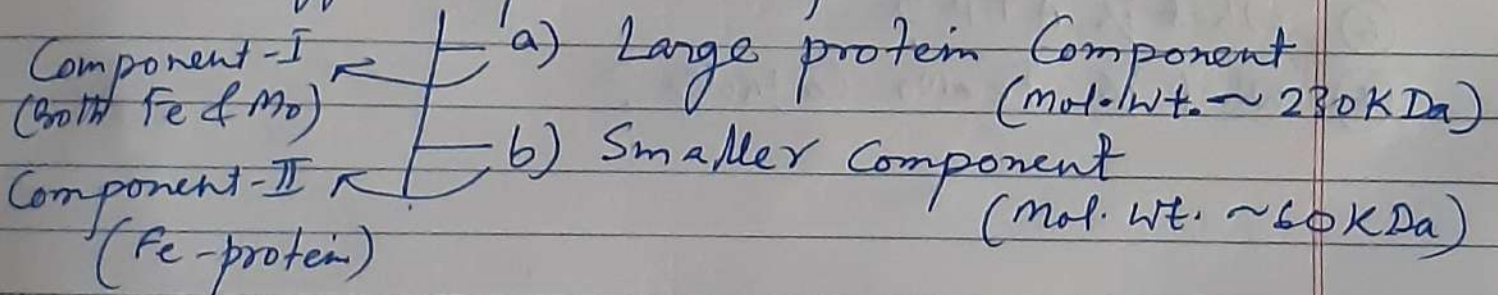


## Composition, Structural aspect & redox properties $\Rightarrow$

Composition  $\Rightarrow$

Mo Containing nitrogenase

Two different protein components





The enzymes obtained from different ~~proteins~~ sources are not strictly identical.  
protein chain  $\rightarrow \alpha$   
 $\rightarrow \beta$

Component - I  $\rightarrow$  Dimer of  $(\alpha\beta)$  unit.  
Tetramer  $(\alpha_2\beta_2)$

Each unit of this dimer contains  
one  $[\text{FeMo-Co}]$  (Paramagnetic)  
and two P-clusters (Diamagnetic)

Related topic :-

- ① In vivo and in vitro
- ② What is cluster? What is cubane like structure?
- ③ Multielectron redox properties (Kinetic aspect)
- ④ Difference between atom, cluster, Quantum dots and macromolecules.
- ⑤ Units of polymeric chain. (e.g., Dalton)
- ⑥ What is ATP?
- ⑦ What is FeMo Co factor?