

**Fate of Carbon and Nitrogen under Nitrogen, Phosphorus and Carbon
Limitations in Unicellular Diazotrophic Cyanobacterium
Cyanothece sp. ATCC51142**

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Although diazotrophs are generally thought to obtain most of their nitrogen (N) supply from N₂ fixation, it has been shown that they are able to take up various forms of combined N (ammonium, nitrate, urea, amino acid and dissolved organic nitrogen) in both filamentous and unicellular diazotrophs including *Cyanothece* sp. ATCC51142 (*Cyanothece*). Although phosphorus (P) is one of the limiting factors of *in situ* growth of diazotrophs, the influence of P limitation on intracellular C and N allocations is still unknown. During the 10th international GAP meeting we investigated how N and P availability influence the fate of C and N in *Cyanothece* during day and night, respectively. The fate of newly assimilated carbon and newly fixed nitrogen under different nutrient status, and heterogeneous N₂ fixation and nitrate uptake among cells will be discussed.