



ROLE OF ANAEROBIC DIGESTION IN DEVELOPING NEXT GENERATION RESOURCE RECOVERY FROM WASTEWATER

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ABSTRACT

Resource recovery is rapidly emerging as a key goal for wastewater treatment, with cost reduction and sustainability as major drivers. Resources recovered include water, energy, nutrients, other elements, and composite or aggregate products. The field is broad, with multiple levels of capacity and technology readiness, as well as compatibility with existing infrastructure. However, a key central aspect is an increasing importance and breadth of scope for anaerobic processes, including as preparation for resource recovery (e.g., recovery of ammonia or phosphate from digestate concentrate streams), to a central role as a primary treatment process, or even in a completely novel application in photo-driven anaerobic growth through an oxygenic phototrophic bacterium. This has changed the research goals towards investigation and analysis of anaerobic processes, with new challenges in classic solids digestion (understanding mineral transformation), as well as new processes which challenge the traditional concept of anaerobic processing with biogas as the final product. This provides the motivation for new approaches, while maintaining the research fundamentals and lessons which have enabled a deep understanding of anaerobic digestion processes to date.