



## Abolghasem Hedayatkah

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### Brief Summary

A big question for me as an applied and environmental microbiologist was “What should do I do (study) to become an Astro (Exo) Microbiologist?” My answer was: to have a self- or semi- sustainable life in outer space we need to address three essential aspects of life requirement, energy production, mineral processing, and waste management; hence my journey to become an Astro Microbiologist began. I studied waste bioconversion as my BSc project, and further enhance it to biofuel production during my MSc thesis.

I joined the Royal Netherlands Institute for Sea Research (NIOZ) to further deepen my understanding of both waste management by working on bioremediation, and bioenergy production by working on the production of the 3<sup>rd</sup> generation of biofuels (biodiesel from cyanobacteria and microalgae), the cleanest form of energy. And here I am at Microbial Biotechnology group of Curtin University, one of the leading universities in the field of biomining, to learn about the third aspect of sustainable life in outer space, mining, but using microorganisms, the smallest miners on this planet!

As a researcher I am studying the formation of biofilms on the surface of Monazite, a phosphate mineral, to prove the microbial bioleaching model proposed by our group earlier. In this project, we would like to understand the microbial made changes on the surface and subsurface of Monazite. I am also working on bioleaching of other phosphate minerals using new microbial strains for bioleaching. The result of this study would be of great value to further enhance the bioleaching of phosphate minerals. Without doubt, by doing an on the edge of science research here at Curtin University, I will get one step closer to become an Astromicrobiologist.

**Educations:** BSc and MSc in Microbiology (Applied and Environmental Laboratory, Shahid Chamran University, Ahvaz, Iran)

**Research interests:** Microbial Biotechnology, Bioleaching, Biofuels, Bioremediation, Biological Waste Management

**Thesis title:** Microbial mobilization of metals from minerals important for energy applications

**Supervisors:** Professor Elizabeth Watkin, Professor Andrew Putnis, Professor Jacques Eksteen, Dr. Anna Kaksonen

### Links:

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