



Pyrene Degradation by *Mycobacterium* sp. KMS Biochemical Pathway, Enzymatic Mechanisms, and Humic Acid Effect

By Yanna Liang

Dissertation.Com. Paperback. Book Condition: New. Paperback. 184 pages. Dimensions: 9.7in. x 7.4in. x 0.4in. Pyrene, a four-ring polycyclic aromatic hydrocarbon (PAH), was identified as the chemical that requires the largest land area for soil bioremediation due to the slow rate of biodegradation at the Libby, Montana Superfund site. Prepared bed land treatment is the specific bioremediation technology that is currently employed at this site. Although bioremediation has been widely accepted for treatment of contaminated soil due to its low cost, the effective application of bioremediation is often hindered by the lack of information related to: 1) biochemical pathways, 2) enzymatic mechanisms, and 3) effects of amendments. *Mycobacterium* sp. KMS is a new strain isolated from the land treatment units of the Libby site and has been found to utilize pyrene as a carbon and energy source. The genome of *Mycobacterium* sp. KMS was sequenced by Joint Genome Institute (JGI) and is publically available in the NCBI database. This dissertation is comprised of seven chapters. Chapter 1 provides information concerning PAH characteristics, the Libby Superfund site, accelerated bioremediation approaches, and the hypotheses for this dissertation. Chapter 2 addresses the pyrene degradation pathway used by *Mycobacterium* sp. KMS based on isolating and identifying...



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