

The Thorium Distributions of Hellas Basin, the Large Impact Crater of Mars. L.-C. Huang¹, M.-H. Zhu² and W.-H. Ip¹ ¹Institute of Astronomy, National Central University, Taiwan (No.300, Jungda Rd., Chungli, Taoyuan, Taiwan), ²Macau University of Science and Technology, Macau (Avenida Wai Long, Taipa, Macau).

Introduction: The Hellas basin, formed 3.8 billions years ago, is one of the largest impact structures on Mars with 2300 km in diameter and ~ 9 km in depth[1],[2]. The basin is suggested to be formed by the oblique impact[3], which may excavate the deep (crustal, even mantle) materials outside[4]. The materials in and surrounding the basin can help us to understand the composition under the surface, even give us more key information to study the interior structure. The thorium concentration of Hellas basin is relatively less in the floor than its surrounding [5]and it is also less in northerneast and southernwest floors than northernwest floor. However, for Hellas basin, the relationship between thorium distribution and its topographic shape was destroyed by fluvial activity and sedimentation[4], except the northwest of the basin. We studied the thorium content of Hellas basin with its topographic and hydrological features, investegated the geological distribution and ages of this area, and hope to resolve several related questions. For example, why there is a shift between the boundaries of topographic and thorium distribution; what is the geological processes Hellas basin experienced; or is there any effect of water leaching makes the different thorium concentration between surrounding floors and inside of the basin.

References: [1]Smith, D. E., et al., (1999), Science, 284, 1495. [2]Smith, D. E., et al., (2001), JGR, 106:23, 689. [3]Tanaka, K. L. and Leonard, G. J., (1995), JGR, 100:5407. [4]Taylor, G. J., et al., (2007), JGR, 111, E03S06. [5]Boynton, W. V., et al., (2007), JGR, 112, E12S99.