**Title:** Infrared Observations of Solar System Objects

**Performing Organization:**
University of Arizona
Lunar and Planetary Laboratory
Tucson, AZ 85721

**Investigator’s Name:**
Larry A. Lebofsky

**Description:**

**a. Strategy:** This program is a continuing effort to study the near infrared (reflected) to thermal infrared flux from asteroids and other airless bodies using ground-based telescopes. The goal of the observations is to investigate the mineralogy and thermophysical properties of these bodies and to support present and potential future missions such as Galileo, CRAF, IRAS, and SIRTF.

**b. Accomplishments:** During the past year, we have continued our search for water of hydration on asteroids. 1) Our work has shown that water in the form of hydrated silicates does not exist on the surfaces of the outer belt asteroids. This implies that the water we see on the c-class asteroids is most likely aqueous alternative products. That water in the ultraprimitive asteroids may be in the form of ice rather than water of hydration. 2) We are also continuing our work on the thermal properties of asteroids. We have found that the lightcurve of 532 Herculina is done primarily to shape rather than the proposed surface albedo variation. 3) In collaboration with other groups we have taken advantage of the mutual events between Pluto and its satellite Charon; we have discovered water ice on the surface of Charon and are studying the surface composition of Pluto.

**c. Anticipated Accomplishments:** During the next year, we will continue to study the distribution of volatiles on asteroids. We will be concentrating on the fainter outer belt asteroids for which we have little data. We will also be working on refining our ground-based and IRAS thermal models with emphasis on improved thermophysical models and investigation of the discrepancies between ground-based and IRAS results. Finally, we will be continuing our studies of the spectral emission of Mercury for the determination of surface composition.
d. PUBLICATIONS


