Abstract

Signatures of water in the asteroid belt are found in the form of water ice and hydrated minerals on main-belt asteroids. When paired with cosmochemistry studies of meteorites and thermal modeling of asteroid parent bodies, these water signatures provide us with a way to estimate the availability of water in the asteroid belt during the early epochs of the Solar System. However, space weathering processes, which modify an airless body's surface over time, reduce our ability to accurately characterize asteroid compositions and pair them with meteorites. I will present results from visible and near-IR studies of young and old hydrated asteroids to provide an observational view of the spectral variations resulting from space weathering. I will also present results from laser irradiation experiments that simulate space weathering processes on hydrated minerals. I will discuss how space weathering trends may be a tool to probe the hydration history of asteroids and how these typically destructive processes may induce important chemical reactions on the surfaces of asteroids.