

Exploration of Near-Earth Asteroids (4)  
Exploration of Near-Earth Asteroids (2) (2)

Author: Dr. José A Carrasco  
Universidad Miguel Hernández, Spain, jacarrasco@umh.es

Dr. José M. Blanes  
Universidad Miguel Hernández, Spain, jmblanes@umh.es

Mr. Cristian Torres  
Universidad Miguel Hernández, Spain, cristian.torres@alu.umh.es

Dr. Francisco García de Quirós  
Universidad Miguel Hernández, Spain, fgarciani@umh.es

Dr. Ausias Garrigós  
Universidad Miguel Hernández, Spain, augarsir@umh.es

Mr. Javier Rubiato  
Universidad Miguel Hernández, Spain, jrubiato@umh.es

Dr. David Marroquí  
Universidad Miguel Hernández, Spain, dmarroqui@umh.es

Dr. Roberto Gutiérrez  
Universidad Miguel Hernández, Spain, roberto.gutierrez@umh.es

Mr. Higinio Alavés  
Embedded Instruments and Systems S.L., Spain, higinio.alaves@emxys.com

Mr. José A. Palazón  
Embedded Instruments and Systems S.L., Spain, japalazon@emxys.com

SMALL SPACECRAFT PLATFORM FOR SCIENTIFIC EXPLORATION OF NEAR EARTH  
OBJECTS

**Abstract**

The use of small space platforms, with mass ranging from 1kg (pico-satellites) up to 100kg (mini-satellite), is leading a revolution in the space industry by allowing the materialization of scientific missions, and even commercial projects, at a cost significantly lower to those of traditional missions. The apparent success obtained by a plethora of these platforms within Earth orbit is pushing its consideration for not-Earth-bound missions for scientific applications that may later evolve to the promotion of commercial ones involved, at a first stage, in space mining. This work deals with the design and implementation of the platform functional blocks, with special emphasis on the power and propulsion systems, within a micro-platform whose goal is to travel to the asteroid belt and the main requirement is to provide a capability to the spacecraft to realise orbit manoeuvring and attitude control with a minimum  $\Delta v$  of  $2.5\text{km}\cdot\text{s}^{-1}$  at a distance of approximately 1AU.