

## **Asteroid Spectral Imaging Mission - ASPECT**

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The ASPECT mission is planned as a part of a larger Asteroid Impact & Deflection Assessment (AIDA) mission. A 3U CubeSat will travel with the ESA AIM spacecraft to the Didymos asteroid, where it will be deployed to perform its own mission.

ASPECT aims to study the composition of the Didymos asteroid and the effects of space weathering and shock metamorphism in order to gain understanding of the formation and evolution of the Solar System.

The AIDA mission includes an impact experiment, which opens up a possibility for a novel scientific experiment. Whereas Didymos is a space-weathered asteroid, it is believed that space weathering has a small penetration depth, affecting typically only the first millimetres of an asteroid's surface. The impactor is expected to produce a crater and excavate into greater depths, so fresh material should be brought to the surface.

ASPECT, a 3U CubeSat equipped with a spectral imager, will be used to measure the spectral characteristics of the impact site before and after the impact. The spectral imager on board the satellite will be capable of performing spectral measurements between 500-2500 nm, and it will be used to map the surface of the Didymos secondary with a spatial resolution better than 10 m.

ASPECT will thus demonstrate the capabilities of a CubeSat and a nanosatellite-based spectral imager for the first time in deep-space environment.

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