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Hayabusa-2, sample-return mission to the C-type asteroid 1999JU3, and its scientific goals

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Recent progresses in research of extraterrestrial materials have revealed that the most pristine materials in the solar system are an interacted mixture of minerals, ice, and organic matter. It is accordingly important to study the interactions between minerals, ice, and organic matter within the pristine materials in the dynamically active protosolar disk to understand the very early evolution of minerals, ice, and organic matter, which would have later evolved to the Earth, ocean, and life, respectively. However, there have been no returned samples keeping the interactions between inorganics, ice and organics intact. In this talk, we will illustrate the importance of sample-return return missions from undifferentiated asteroids and comets, which preserve pristine minerals, ice, and organics, and introduce the scientific goals in the future Japanese asteroidal sample return mission, Hayabusa-2, to the C-type asteroid 1999 JU3.

Keywords: Hayabusa-2, sample return, asteroid, mineral, ice, organics