The Fountains of Enceladus Visitor Center:

*What it will do for Space Architecture*

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# Abstract

The history of Architecture is replete with efforts to compile encyclopedic surveys and registries of building types and site planning. In *Space Architecture,* this initiative began with the Habitats and Surface Construction Roadmap (Cohen, Kennedy, 1997). It continues as design concepts emerge and mature (Cohen, Benaroya, 2009; Kennedy 2009). The campaign to design habitat, base, settlement, and colony concepts for bodies throughout the solar system and beyond leads to a kind of “periodic table” of Space Architecture. This typology will cross-reference the construction technology with the space environment, taking into account the environmental threats such as hypogravity, radiation, micrometeoroids, dust, extreme thermal cycles, and long mission durations necessitated by the very great distances.

Enceladus, a moon of Saturn in the E-ring, presents the best opportunity to develop a model for an *icy moon* habitat, base, or settlement. The Enceladus environment is water-rich, very low gravity, exposed to high levels of radiation, and affords spectacular views of the “ice volcano” vents at the South Pole. The design of this base will require substantial provisions for artificial gravity, radiation protection, food production, regenerative life support using the water ice, nuclear power, and thermal control in a very cold environment. This project will afford the challenge to design the first human living and working for the icy world type of extreme environment. Completing this project will help to fill an element “cell” in the “periodic table” of Space Architecture typology.

[Cohen, Marc M.](http://www.spacearchitect.org/members/member.htm#mc); Kennedy, Kriss J. (1997 November).  Habitats and Surface Construction Technology and Development Roadmap.  In A. Noor, J. Malone (Eds.), Government Sponsored Programs on Structures Technology (NASA CP-97-206241, p. 75-96).  Washington, DC, USA: NASA.

[Cohen, Marc M.](http://www.spacearchitect.org/members/member.htm#mc); Benaroya, Haym (2009).  Lunar-Base Structures.  In [A. S. Howe](http://www.spacearchitect.org/members/member.htm#ash), [B. Sherwood](http://www.spacearchitect.org/members/member.htm#bs) (Eds.), Out of This World: The New Field of Space Architecture (Chapter 15, p. 179-204).  Reston, Virginia, USA: AIAA.

Kennedy, Kriss J. (2009).  Vernacular of Space Architecture.  In [A. S. Howe](http://www.spacearchitect.org/members/member.htm#ash), [B. Sherwood](http://www.spacearchitect.org/members/member.htm#bs) (Eds.), Out of This World: The New Field of Space Architecture (Chapter 2, p. 7-21).  Reston, Virginia, USA: AIAA.