**Abstract:** Developing innovative aerospace structures requires research at the intersection of materials development and manufacturing technology. The demanding applications faced by spacecraft and rovers require that new materials and manufacturing technologies are developed to produce hardware that cannot be made conventionally. The current talk focuses on creating and processing advanced metal alloys and showing how they can be integrated into hardware that has benefits over conventional technology. The talk will focus on metal additive manufacturing (3D printing) with focus on the development of functionally graded metal alloys, bulk metallic glasses (also known as amorphous metals), and multifunctional additive manufacturing. A general discussion about future spacecraft structural material needs will be presented along with examples of prototype hardware.

**Biography**

Dr. Douglas Hofmann is a Technologist and founding member of the Materials Development and Manufacturing Technology Group at JPL. He is also a Visiting Associate and Lecturer in Materials Science and Applied Physics at Caltech. He has a B.S. and M.S. in Mechanical Engineering from U.C. San Diego and an M.S. and Ph.D. in Materials Science from Caltech. Prior to joining JPL, he was a Research and Development Scientist at Liquidmetal Technologies. Dr. Hofmann has received many awards for his research, most notably the 2012 Presidential Early Career Award for Scientists and Engineers from President Obama for his work in the development of metallic glass metal matrix composites. He has founded two start-up companies to commercialize technology developed at NASA JPL/Caltech.