## 3D Printing of Irregularly Shaped Ti-6Al-4V Powders Using Laser Powder Bed Fusion

Laser powder bed fusion is the most common metal additive manufacturing technique used today. This method uses a high-powered laser to locally melt and weld together metal powder alloy that is uniformly spread in a semi compacted bed to produce a 3D printed component. This method allows designers an unprecedented amount of geometric complexity along with a high degree of net shape capabilities. is an attractive alloy for metal additive manufacturing as this process produces the high strength to weight ratio inherent to this alloy and avoids the difficulty of machining this high strength reactive metal alloy. Traditionally, spherical titanium alloy powders produced via inert gas atomization or plasma atomization have been commercialized for use in laser powder bed fusion applications because of the ease of powder spreadability within the metal powder bed. One drawback of these atomizing techniques is cost as both methods have a lower than desired yield of particles in the correct size range and both methods also use large quantities of argon gas. Recent collaborative development has shown that lower cost angular Ti-6Al-4V produced via the hydride/de-hydride process can successfully be 3D printed using laser powder bed fusion. This presentation will review the results gathered by Kymera International and our development partners to date including microstructure and mechanical properties achieved.

## Bio

Michael Marucci currently serves as VP, Business & Technology at Kymera International, a Global leading provider of Aluminum, Copper, Titanium and other nonferrous metal powders and particulate materials. He is responsible for new product development at Kymera International. Previously, Michael served as VP, Sales & Marketing for Powders at AMETEK Specialty Metal Products and in several technology and sales leadership roles at GKN Powder Metallurgy and Hoeganaes Corporation. Michael is a graduate of Drexel University and holds degrees in Materials Engineering and Engineering Management and presently serves on the MPIF Board of Governors. Michael is based at Kymera's Reading Alloys location and lives in Bucks County Pennsylvania.