**AIMS2 Research Project in Manufacturing Systems Engineering program**

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| **Research Duration:**  | Fall 2018 – Spring 2019 |
| **Faculty:**   | Bingbing Li |
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| **Contact No:****Title of Project:**  | JD-3305, 818-677-6229, 8:30am-11:30pm, Friday**Additive Manufacturing for Lightweight Metal Matrix Nanocomposite** |

**Goals and Objectives of the Project, Expectations and Outcomes**

Describe briefly what students can expect to learn by participating in this project.

Lightweight materials, such as aluminum (Al) and its alloys, have been extensively used in today’s society for energy savings and environmental sustainability because of their high specific stiffness, high specific strength, corrosion resistance, and good ductility. Laser additive manufacturing (LAM), with its intrinsic layered rapid melting and solidification at a cooling rate about 103 to 107 K/s, has been applied to directly produce functional materials/components that can potentially meet the demanding requirements from aerospace, defense, automotive and biomedical industries. The fabrication of near net shape Metal Matrix Nanocomposite (MMNC) printed via selective laser melting (SLM) technology will allow researchers to find new methods of developing 3D printed lightweight metal parts. The Renishaw AM400 with the resolution of 20 microns demonstrates the possibility of using SLM technology. By using metallographic observation, surface coatings and surface finish processes, it is capable to produce mechanical properties and surface finish specifications that adhere or surpass to current aerospace standards.