

Education

University of California, Berkeley | GPA: 3.95/4 | Berkeley, CA, USA

August 2016 – May 2017

Master of Engineering in Materials Science and Engineering | Concentration: Advanced Structural Materials

Indian Institute of Science | GPA: 7.4/8.0 | Bangalore, India

August 2012 – May 2016

Bachelor of Science in Materials | Awarded *The Institute Medal* for exceptional academic performance | Class position: 1st of 30

Technical Skills

(More at shashankhr.com/skills)

Techniques in Materials Science

Optical Microscopy, SEM, EDS, XRD, Microhardness Testing, UTM Mechanical Testing, and more

Scientific Tools

Wolfram Mathematica, Thermo-Calc, JMP, OriginPro, , LaTeX, Matlab

CAD and Design Tools

Adobe InDesign, Illustrator and Photoshop, Autodesk Alias

Relevant coursework

(More at shashankhr.com/courses)

Thermodynamics and Kinetics

Electron Microscopy and Characterization

Computational Materials Science

Science of Materials

Mechanical Behavior of Materials

Solidification Processing

Processing

Microstructural design and Development

Mechanical Properties (lab course)

Materials, Manufacturing and Design

Mechanics of Solids

of Engineering Materials

Probability and Statistics

Phase Transformations

Algorithms and Programming

Experience

(More at shashankhr.com/research)

Desktop Metal | Materials Engineer | Burlington, MA, USA

June 2017 – Present

A member of the Materials team at Desktop Metal, a company striving to make metal 3D printing office-friendly.

- Led projects across the process for the Studio System™, including new material development, toolpath planning, geometry accuracy and compensation, R&D furnace architecture, R&D throughput metrics, internal part-tracking, experimental data storage and analysis, specification and build of custom experimental equipment, and many more. A few projects have led to filing of provisional patent applications.
- The list of projects includes a mix of assigned projects, and projects initiated by me when the need was recognized.

University of California, Berkeley | Capstone Project | Berkeley, CA, USA

August 2016 – May 2017

Title: Improving Reliability of 3D Printed Materials in Biomedical Applications

- Worked on the corrosion aspects of metal additively manufactured parts, in the context of orthopedic implants.
- Performed mechanical testing in corrosive environments and examined the failure surface using standard metallographic techniques.
- Used this data to generate design guidelines for additively manufactured implants.

Georgia Tech | Direct Digital Manufacturing Lab | Bachelor's Thesis | Atlanta, GA, USA

May – December 2015

Title: Design-of-Experiment Based Process Optimization for Single-Crystal CMSX-4® Ni-based Superalloy Processed Through Scanning Laser Epitaxy (SLE), a Metal Additive Manufacturing Process

- Learned about additive manufacturing technologies that can be used for metals in general, and for Ni-based superalloys in particular.

- This process can add immense value to customers in the commercial aviation industry by enabling repair and reuse of high-value parts, thus dramatically extending the service life of these components, resulting in substantial savings.
- Performed experiments and analysis as a part of a Design-of-Experiment based process optimization. Additionally, my expertise with metallography and characterization led to significantly better micrographs, rendering more features visible.

GE Global Research | Manufacturing and Materials Technologies | Internship | Bangalore, India **May – July 2014**

Title: Investigation of recrystallization due to compression straining in Ni-based superalloy GTD 444

- Learned about Ni-based superalloys, particularly Single Crystal (SX) and Directionally Solidified (DS) superalloys, used in jet engines and gas turbines. Performed systematic metallographic analysis and analyzed the micrographs using image processing techniques.
- Understood the importance of microstructure, and how subtle changes therein could result in large changes in macroscopic properties.
- Experienced the scale at a large multi-national corporation that manufactures many different products, from light bulbs to jet engines, and gained exposure to corporate R&D operations.

Indian Institute of Science | Materials Engineering | Summer Project | Bangalore, India **May – July 2013**

- Studied flow pattern formation due to liquid electromigration and thermomigration in Gallium.
- Worked in nanofabrication and nanocharacterisation facilities (in the cleanroom), at Centre for Nanoscience and Engineering, Indian Institute of Science.
- Learned to use a Scanning Electron Microscope, with its various peripheral functions such as EDS and EBSD.

Publications

Patent Applications

- Nanoparticle delivery for controlling metal part density in additive manufacturing (US20180236541A1)
- Adaptive 3D printing (US20180307209A1)
- And more applications, pending publication

Scientific Journals

- Microstructures and Microhardness Properties of CMSX-4® Additively Fabricated Through Scanning Laser Epitaxy (SLE)
Basak, A., Holenarasipura Raghu, S. & Das, S. J. of Mater Eng and Perform (2017) 26: 5877.
<https://doi.org/10.1007/s11665-017-3008-9>

Workshops, Certifications, and Continuing Education

- Introduction to Solidworks (Fall 2019)
- Introduction to Machining (including over 30 hours of machine time on mills and lathes) (Spring 2019)
- Machine Learning in Materials Science (October 2018)
- Problem Solving using Design of Experiments (4 day course, July 2016)
- Certificate course in Java Programming (certified by Sun Microsystems) (Summer 2011)