

Master's Thesis

3D Printing of siloxane based porous ceramic components for sensor applications

The goal of the proposed thesis is the development of porous ceramic components by using the blends of preceramic polymers via 3D printing, i.e. specifically additive manufacturing by Stereo Lithography (SLA). SLA will produce flawless, homogenous and precisely reproducible components in an environmentally conscious manner. Upon curing and pyrolysis, the nano-phase composition of the formed amorphous polymer derived ceramic (PDC) will be tailored to enhance their carbon content. The formed samples will be analyzed for structural characterization; then both with and without etching will be tested for gas, temperature and pressure sensing capacity.

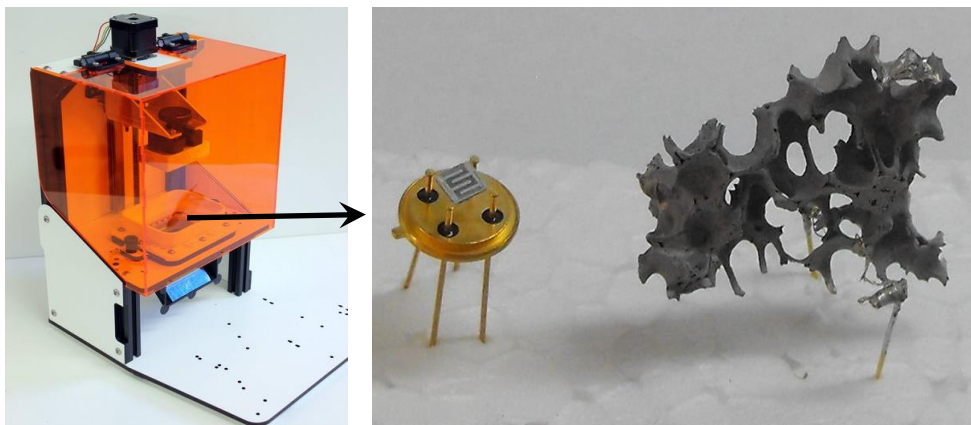


Figure 1.(a, left image) Digital photo of the Stereo Lithography (SLA) 3D printer; (b, left image) an example sensor device circuit system made from highly porous ceramic bodies.

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