



Polymer Binder Development for Indirect Selective Laser Sintering of Oxide Ceramics

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Abstract:

Indirect selective laser sintering (I-SLS) is an additive manufacturing technique capable of printing oxide ceramic structures. To do so, the oxide of choice must be incorporated with a polymer binder to be processed in a selective laser sintering (SLS) machine. After a part is printed from this composite powder, the polymer must then be removed to yield a fully oxide structure. This makes the choice of polymer binder very important. The research presented outlines the process of developing a polymer binder that suits the I-SLS process and details the results from experiments performed up to this point. An 80% PMMA/20% PnBMA (mol/mol) co-polymer has been successfully developed as a binder system for I-SLS. Next steps include spray drying the polymer to coat oxide particles, and then developing SLS process parameters to print green parts.