

3D PRINTING OF CONDUCTIVE NANOCARBON BASED COMPOSITES

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Digital Light Processing (DLP) [1] is an additive manufacturing technology, which offers new opportunities in a variety of fields. DLP is a Vat photopolymerisation process type, which manufactures objects layer upon layer by projecting 2D light patterns onto a liquid photocurable resin. This process is limited to photocurable resins that are usually insulators and transparent. Manufacturing conductive materials loaded with nanocarbon particles, including nanotubes [2], [3], [4] or graphene[5], would significantly broaden the spectrum of applications of the DLP technology as EMI shielding or stealth [6], [7]. However, several challenges are faced towards this objective. These challenges include the stabilization of nanocarbon particles into the resin, the achievement of acceptable transparency of the UV-light in order to photopolymerize the resin, and the realization of conductive materials formed by a percolation network. We will present in this work the efficient dispersions of nanoparticles and the final electrical properties of objects made by 3D printing DLP.

References

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Figures

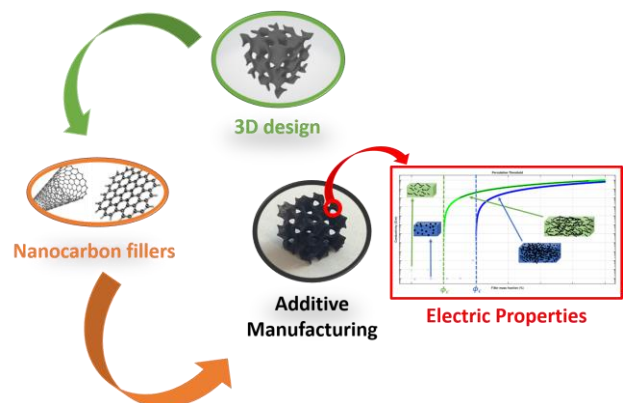


Figure 1: Schematic approach of conductor nanocarbon composites made by additive manufacturing.