



162162

- 18 -



ACTION

ABSTRACT

METHOD FOR DETERMINING RESIN CURING AREAS IN AN OPTICAL STEREOLITHOGRAPHY PROCESS

A method for determining the areas of resin to be cured in an optical stereolithography process for rapid prototyping using sequential laser curing of layers of a resin having a selected thickness to produce a desired shape of cured resin. The method includes the steps of generating a computer model of desired shape and dividing the model into layers of thickness equal to the thickness of the layers each defining an area of resin to be cured. A set of layers including and sequentially adjacent an intermediate layer is selected and the areas in the intermediate layer of resin which would be oversized by laser curing of layers later in the curing sequence is determined. The 2-D layer data used to build a 3-D model is modified to compensate for the oversizing and the steps repeated by sequentially selecting sets of layers to include substantially all of the layers as the intermediate layer. The sets are sequentially selected with each subsequent set having the intermediate layer being the layer adjacent the intermediate layer of the previously selected set. The first selected set includes the first layer to be cured and the sequential subsequent sets respectively include as the intermediate layer the subsequently cured adjacent layer.

Figure 1 is to be published.