

Virtual Laser-micromachining of MEMS Components

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Abstract—Finite element models were developed to virtually carry out laser-micromachining of MEMS components. Four different MEMS components – micro-bridge, micro-cantilever array, micro-mirror and micro-come- were considered in the virtual work. Heat flux propagation and temperature plots generated by virtual laser-micromachining were compared and discussed. The important factors to obtain the realistic results from the virtual work were highlighted. The results are generally consistent with the expected laser machining mechanism. This virtual work provides the important information on laser-micromachining parameters and could lead to the possibility of replacing the conventional method with laser-machining in fabricating micron-size components such as MEMS.

Index Terms - MEMS, finite element modeling, laser-micromachining, virtual technology