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(54) **LOSSY FIBER UV CURING METHOD AND APPARATUS**

(75) Inventors: **Alan J. Bilanin**, Princeton, NJ (US); **Andrew E. Kaufman**, West Windsor, NJ (US); **Robert McCullough**, Sausalito, CA (US)

(73) Assignee: **Continuum Dynamics, Inc.**, Ewing, NJ (US)

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Primary Examiner—Susan Berman
(74) *Attorney, Agent, or Firm*—Synnestvedt Lechner & Woodbridge, LLP; Richard C. Woodbridge, Esq; Roy J. Rosser

(57) **ABSTRACT**

A method and apparatus for light curing of composite materials in which the radiation required to initiate the curing is delivered via one or more lossy fiber optics. The fiber optics are made lossy by methods such as bending the fiber, weaving the fiber into a mat to create periodic micro-bends, tailoring the thickness of the fiber cladding to allow evanescent wave transmission, or simply removing the cladding at intervals along the fiber. Distribution of the light through out the composite material results in dramatic power and time reductions over traditional light curing methods. Unlike thermal curing of composite materials, there is no need for an auto-clave and hence no limit on the size of the part that may be created. Additional benefits include the possibility of curing at operational temperature and so avoiding thermal stresses.

29 Claims, 5 Drawing Sheets