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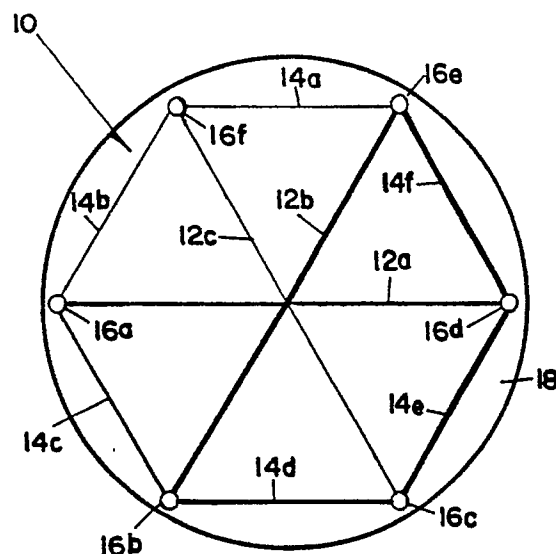
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(54) **Lightweight structures and methods for the fabrication thereof.**

(57) A process is disclosed for fabricating lightweight structures out of material such as silicon carbide (SiC) and silicon (Si). The lightweight structure consists of a core (10) to define the shape and size of the structure. The core is coated with an appropriate deposit such as SiC or Si to give the lightweight structure strength and stiffness and for bonding the lightweight structure to another surface.

The core (10) is fabricated from extremely thin ribs (12a, 12b, 12c and 14a.....14f) of appropriately stiff and strong material such as graphite. First, a graphite core consisting of an outer hexagonal cell with six inner triangular cells is constructed from the graphite ribs. The graphite core may be placed on the back-up side of a SiC faceplate and then coated with SiC to produce a monolithic structure without the use of any bonding agent. Cores and methods for the fabrication thereof in which the six inner triangular cells are further divided into a plurality of cells are also disclosed.



**Fig. 1**

**EP 0 411 910 A3**



## EUROPEAN SEARCH REPORT

EP 90 30 8434

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	APPLIED PHYSICS LETTERS, vol. 54, no. 25, 19th June 1989, pages 2512-2514, American Institute of Physics, New York, US; J.S. GOELA et al.: "Rapid fabrication of lightweight ceramic mirrors via chemical vapor deposition" * Page 2513, left-hand column, lines 2-11; page 2513, right-hand column, lines 23-26 *	1-3	E 04 C 2/36 G 02 B 5/10 B 64 G 1/00 B 64 G 1/44
A	IDEM -- --	5-10,15	
Y	US-A-3 507 737 (BUSDIECKER) * Column 5, lines 10-42 *	1-3	
A	-- --	11	
A	US-A-4 678 292 (MIYATANI) * Figures 5,6 *	1,11	
A	US-A-4 292 375 (KO) * Column 3, lines 46-50 *	1-4	
D,A	US-A-4 716 064 (HOLZL) * Abstract *	1	
P,A	US-A-4 917 934 (SEMPOLINSKI) * Figures 3,4 *	1	
A	FR-A-2 545 037 (MESSERSCHMITT-BOLKOW-BLOHM) * The whole patent *	1	
The present search report has been drawn up for all claims			
Place of search		Date of completion of search	Examiner
The Hague		26 July 91	HAUGLUSTAINE H.P.M.
<b>CATEGORY OF CITED DOCUMENTS</b>			
X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention		E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons ----- &: member of the same patent family, corresponding document	