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Patentanwälte Dreiss, Hosenthien,
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D-70188 Stuttgart (DE)**(54) **Procedure for forming, on a solid substrate, a film with properties similar to those of diamonds, the solid bodies so coated and the self-sustained film so obtained.**

(57) The main goal of this invention patent is a procedure for forming an amorphous carbon film over a solid, which film has physical and chemical properties similar to those of diamond. Its ancillary objects are the solid bodies so coated and the self-sustained film obtained in a subsequent stage of dissolution of said substrate.

The application field is quite wide, and we cite: tools, shafts and bushings of certain mechanisms, surgical prostheses, lens protection and other optical devices, etc.

The inventive idea consists of generating a highly accelerated beam of carbon-hydrogenated ions, which is made to impact with sufficiently high energy on the surface of the substrate. The beam is concentrated by electrostatic lenses and homogenized by a magnetic mass separator.

The main objectives of this invention are: a pro-

cedure for forming, on a solid substrate, a film with properties similar to those of diamond: high hardness, high chemical stability, transparency, high heat conductivity and high electric resistivity; obtainable at ambient temperature, simpler than known procedures; able to produce a smooth film, regardless of the electrical qualities of said substrate and of its geometry, and with such a degree of adherence that it does not allow separation of this film other than by destructive means.

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	WO-A-8 810 321 (UNIVERSITY OF HOUSTON-UNIVERSITY PARK)	1, 4, 8	C23C14/22
A	* page 8, line 12 - line 32 *	2, 3, 5-7, 9, 10	C23C14/00
	* page 13, line 1 - line 5 *		C23C14/06
	* page 18, line 12 - line 32; claim 18 *		

Y	THIN SOLID FILMS vol. 167, no. 2, March 1988, LAUSANNE CH pages 211 - 218 , XP30182 P. CHATTERJEE ET AL 'CHEMICAL EFFECT OF CH ₄ ⁺ IMPLANTATION INTO IRON NICKEL AND ALUMINUM THIN FILMS'	1, 2, 4, 8	
	* page 212, line 25 - page 213, line 11; table 1 *		

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A	* page 322, line 13 - line 23; figure 4 *	2-10	C23C

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16 AUGUST 1993	Examiner EKHULT H.U.
CATEGORY OF CITED DOCUMENTS			
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	



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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16 AUGUST 1993	Examiner EKHULT H.U.
CATEGORY OF CITED DOCUMENTS 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			