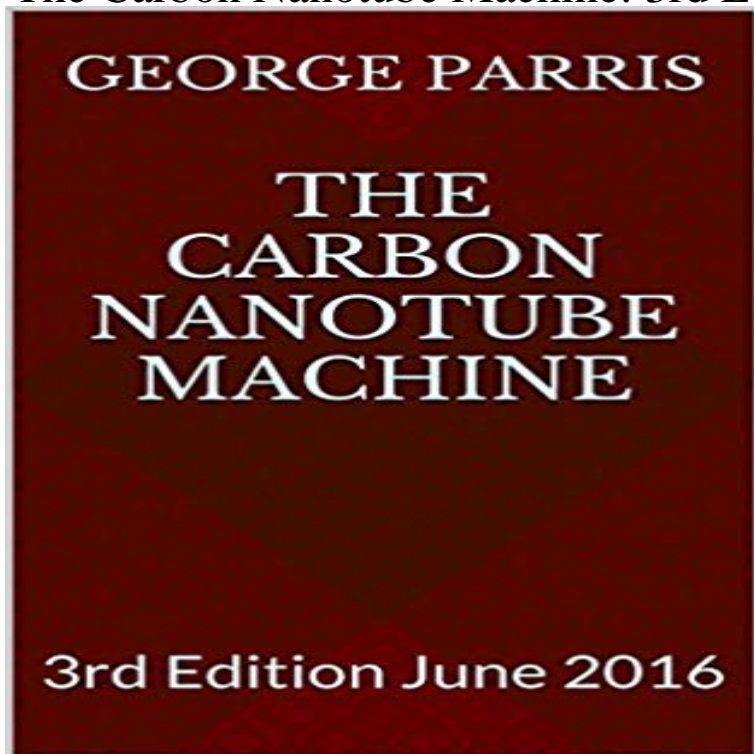


## The Carbon Nanotube Machine: 3rd Edition June 2016



Third Edition June 1, 2016 Preface This brief publication proposes several approaches to manufacturing long carbon nanotubes and/or conducting sp<sup>2</sup> carbon polymers on a commercial scale. I became interested in carbon nanotubes in 2014 and discovered that the field is dominated by inorganic and theoretical chemists. I happen to be an organic chemist and have been interested for some time in the structure of graphite and its potential application. It appears to me that the current thinking concerning carbon nanotubes considered the carbide (C<sub>2</sub>)<sup>2-</sup> ion associated with various metal cations as the basic building block of nanotubes. No wonder they are thinking about temperatures of thousands of degrees with vaporized carbon. I think the key here is not carbide, but rather polycarbyne or polycarbene: (-CC-CC-CC-CC-)n or (=C=C=C=C=C=C=C=C=C)n In polycarbyne or polycarbene you already have established the linear dimension of the nanotube or other complex sp<sup>2</sup> polymer and it is easy to imagine the remainder coming together driven by the enthalpy of reaction. The question then becomes, how to make and control these polymers? I am not alone in thinking that such an approach might work, Professor Christopher B. Gorman (NC State University) has framed the problem as follows: In the most general sense, it remains unclear how one might prepare a material that has the excellent conductive properties of graphite yet is amenable to processing steps required to fabricate the material into a device. This bottleneck translates into a lack of functional polymeric materials such as precursor polymers to highly conducting ladder or other graphite sub-lattice structures. What might one do with a suitable graphitic polymer precursor? One illustrative example is the as-yet largely unexplored area of direct writing. If upon the application of some type of radiation

(such as UV or electron-beam irradiation used in typical microlithography schemes), one could convert an insulating polymer into a highly conducting polymer, electrical circuitry could be written in one step. Direct writing is but one example of the potential of graphitic polymer precursors. However, it nicely illustrates the current materials shortcomings in electronic device fabrication.

(<http://www4.ncsu.edu/~cbgorman/research/research.html>) The current absence of an organic polymer precursor for production of nanoscale carbon fibers and tubes is true. But, we need not be pessimistic. Not only are there economical polymers that might work on a nanoscale, there are historical examples of organic polymers that have worked on a larger scale (e.g. rayon fibers converted into light bulb filaments).

Agradable ruta realizada junto al Bilbao Alpino que parte desde la localidad alavesa de Guinea, en la vertiente Sur de la sierra de Arkamo y que discurre por las cimas de Olvedo, Pelistornes y Cantoblanco.

Desde Guinea el camino es muy evidente, ya que las dos primeras cimas están muy cerca y separadas por un pequeño collado. Su subida es corta y casi directa y está señalizada justo a la salida del pueblo.

Al Olvedo se llega relativamente rápido. A pesar de que las nubes a veces nos impiden apreciar las vistas, el paisaje se intuye precioso.

2017-01-22\_10-36-17

Para pasar del Olvedo al Pelistornes tan sólo tenemos que cruzar el collado y llegaremos en apenas 10 minutos a nuestra segunda cima del día.

2017-01-22\_10-53-02

Una vez coronadas las cimas anteriores hay que continuar la travesía en dirección a la al Cantoblanco, que se asciende tras un durillo cortafuegos.

20170122\_123405

Desde la cima tenemos justo en frente el Montemayor, máxima altura de la vecina sierra de Arkamo.2017-01-22\_13-00-09

Finalmente, iniciamos el descenso hacia la curiosa localidad de Salinas de Añana...

20170122\_142807

...donde podremos completar la ruta con una visita a las propias Salinas.

20170122\_142812

Una ruta de unos 15 kilómetros sin dificultades reseñables. Únicamente se hace necesaria logística de vehículos. De no tener esta facilidad entonces es mejor realizar únicamente la subida al Olvedo y Pelistornes.

Tu voto:

Publicado en Araba, Rutas fáciles | Deja un comentario

Los Retos de 2017

Publicado el 01/24/2017 por 12meses12montes

Bueno, un nuevo año que ha pasado y uno nuevo que acaba de comenzar. 2016 fue un año muy intenso, si bien los retos que nos marcamos en un principio sólo se vieron cumplidos en una tercera parte. No fue un buen año para ellos, ésta vez la alineación de planetas se generó en pocas ocasiones.

Sin embargo, no decaemos. Cogemos el testigo y no vamos a desistir en su intento, por lo que los retos que no

conseguimos cumplir en 2016 serán los que tratemos de realizar en 2017, más algunos otros, a ver qué os parecen. Seguir leyendo

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