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A Process for Extracting Raw Carbon Material for Biological Diamonds

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English Translation

WITH ORIGINAL CHINESE DOCUMENT APPENDED

ENGLISH TRANSLATION

TRANSLATOR'S NOTE

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ABSTRACT

The present invention discloses a process for extracting raw carbon material for biological diamonds. First, human or animal skin appendages are subjected to high-temperature carbonization under the protection of an inert gas or nitrogen; then impurities are removed from the carbonized material by a chemical method; and finally the purified material is dried. The raw materials used in the present invention are low in cost and easy to obtain; the process features high extraction efficiency and a good purification effect, enabling pure carbon to be obtained and further made into biological diamond memorials, which carry special sentimental significance and have good commercial value.

CLAIMS

1. A process for extracting raw carbon material for biological diamonds, characterized in that it comprises the following steps:

   [1] (1) subjecting human or animal skin appendages to high-temperature carbonization under the protection of an inert gas or nitrogen;

   [2] (2) removing impurities from the carbonized material by a chemical method; and

   [3] (3) drying the purified material.

2. The process for extracting raw carbon material for biological diamonds according to claim 1, characterized in that the high-temperature carbonization in step (1) is carried out as follows: the skin appendages are placed in a covered porcelain crucible, and heated at 850–950 °C for 10–15 minutes in a high-temperature furnace flushed with a protective inert gas or nitrogen, to carry out the carbonization and obtain solid carbon.

3. The process for extracting raw carbon material for biological diamonds according to claim 2, characterized in that the pressure at the inlet of the inert gas or nitrogen is maintained at 0.3–0.5 MPa.

4. The process for extracting raw carbon material for biological diamonds according to claim 1, characterized in that the removal of impurities by a chemical method in step (2) is carried out as follows: the carbonized material is immersed in a mixed acid with stirring and soaking; the upper layer of the liquid obtained after soaking, which contains floating black carbon, is then filtered through filter paper, and the carbon particles on the filter paper are rinsed with water.

5. The process for extracting raw carbon material for biological diamonds according to claim 4, characterized in that the mixed acid is prepared by mixing dilute nitric acid having a mass percentage concentration of 20%±5% with dilute hydrochloric acid having a mass percentage concentration of 15%±5% in a volume ratio of 1:2–3.

6. The process for extracting raw carbon material for biological diamonds according to claim 4, characterized in that the carbonized material is soaked in the mixed acid for 3–5 hours.

7. The process for extracting raw carbon material for biological diamonds according to claim 1, characterized in that the drying in step (3) is carried out as follows: the purified material is dried in a drying oven at 130–150 °C for 1–2 hours.

8. A high-temperature furnace used for carrying out the high-temperature carbonization step of the process according to claim 1, comprising a furnace body, characterized in that: the furnace body (3) is provided therein with a thermal-insulation layer (4) and is covered on its upper part with an insulating cover (2); an air inlet (5) is opened in the lower part of the furnace body; a gas outlet (1) is opened in the insulating cover; and a support (6) is arranged inside the furnace body.

DESCRIPTION

A Process for Extracting Raw Carbon Material for Biological Diamonds

Technical Field

[0001] The present invention relates to a process for extracting raw carbon material for biological diamonds, in which carbon is extracted from human or animal skin appendages as the raw material, the human or animal skin appendages including human or animal hair, fingernails, toenails, dander shed through metabolism, and other appendages.

Background Art

[0002] At present, diamonds, owing to their hardness, rarity, and uniform, crystal-clear and brilliant visual effect, have become a symbol of wealth and glory, and various kinds of jewelry made of diamonds are deeply loved by people. However, as natural diamonds are scarce and cannot satisfy people's demand for diamonds, synthetic diamonds have emerged as the times require.

[0003] Synthetic diamonds are generally made from graphite; therefore, any carbon-containing substance can be used to make diamonds, and sources of carbon are available everywhere. For example, carbon can be obtained by directly reducing carbon dioxide in the air, and materials such as wood and coal also contain carbon. Thus, the materials for making diamonds can be said to be inexhaustible. Depending on the material, however, the technical difficulties to be overcome are different.

Summary of the Invention

[0004] To solve the above problems, an object of the present invention is to provide a process for extracting raw carbon material for biological diamonds, which uses, as materials, human or animal hair, fingernails, toenails, dander shed through metabolism, and other appendages, to obtain pure carbon.

[0005] To achieve the above object, the present invention adopts the following technical solution:

A process for extracting raw carbon material for biological diamonds, comprising the following steps:

(1) subjecting human or animal skin appendages to high-temperature carbonization under the protection of an inert gas or nitrogen;
(2) removing impurities from the carbonized material by a chemical method; and
(3) drying the purified material.

[0006] In the above process for extracting raw carbon material for biological diamonds, the high-temperature carbonization in step (1) is carried out as follows: the skin appendages are placed in a covered porcelain crucible, and heated at 850–950 °C for 10–15 minutes in a high-temperature furnace flushed with a protective inert gas or nitrogen, to carry out the carbonization and obtain solid carbon.

[0007] Further, the pressure at the inlet of the inert gas or nitrogen is maintained at 0.3–0.5 MPa.

[0008] In the above process for extracting raw carbon material for biological diamonds, the removal of impurities by a chemical method in step (2) is carried out as follows: the carbonized material is immersed in a mixed acid with stirring and soaking; the upper layer of the liquid obtained after soaking, which contains floating black carbon, is then filtered through filter paper, and the carbon particles on the filter paper are rinsed with water.

[0009] Further, the mixed acid is prepared by mixing dilute nitric acid having a mass percentage concentration of 20%±5% with dilute hydrochloric acid having a mass percentage concentration of 15% ±5% in a volume ratio of 1:2–3.

[0010] Further, the carbonized material is soaked in the mixed acid for 3–5 hours.

[0011] In the above process for extracting raw carbon material for biological diamonds, the drying in step (3) is carried out as follows: the purified material is dried in a drying oven at 130–150 °C for 1–2 hours.

[0012] A high-temperature furnace used for carrying out the high-temperature carbonization step comprises a furnace body; the furnace body is provided therein with a thermal-insulation layer and is covered on its upper part with an insulating cover; an air inlet is opened in the lower part of the furnace body; a gas outlet is opened in the insulating cover; and a support is arranged inside the furnace body.

[0013] Owing to the adoption of the technical solution described above, the present invention has the following advantages:

In the process for extracting raw carbon material for biological diamonds of the present invention, the raw materials are low in cost and easy to obtain; the process is simple and easy to operate, with low extraction cost, high extraction efficiency and a good purification effect; the carbon extraction rate can reach 10%–14%; and pure carbon can be obtained and further made into biological diamond memorials, which carry special sentimental significance and have good commercial value.

Brief Description of the Drawings

[0014] Fig. 1 is a schematic structural view of the high-temperature furnace.

In the figure: 1 — gas outlet; 2 — insulating cover; 3 — furnace body; 4 — thermal-insulation layer; 5 — air inlet; 6 — support.

Detailed Description of Embodiments

[0015] The technical solution of the present invention is further described in detail below by way of the following examples.

[0016] A process for extracting raw carbon material for biological diamonds comprises the following steps:

(1) subjecting human or animal skin appendages to high-temperature carbonization under the protection of an inert gas or nitrogen: the human or animal skin appendages are placed in a covered porcelain crucible,

and heated at 850–950 °C for 10–15 minutes in a high-temperature furnace flushed with a protective inert gas or nitrogen, to carry out the carbonization and obtain solid carbon, with the pressure at the inlet of the inert gas or nitrogen maintained at 0.3–0.5 MPa.

[0017] Carbonization principle: the constituents of the obtained vital material, i.e., the skin appendages, are all carbohydrates. Upon carbonization at a high temperature of 900 °C, the hydrogen, oxygen, sulfur, phosphorus and the like contained therein are pyrolyzed and volatilized, while the carbon is fixed under the protection of an inert gas or nitrogen (so as to avoid reacting with oxygen in the air to form carbon monoxide or carbon dioxide that would escape).

[0018] (2) removing impurities from the carbonized material by a chemical method: the carbonized material, i.e., the solid carbon, is immersed in a mixed acid with stirring and soaked for 3–5 hours, the mixed acid being prepared by mixing dilute nitric acid having a mass percentage concentration of 20%±5% with dilute hydrochloric acid having a mass percentage concentration of 15%±5% in a volume ratio of 1:2–3; the upper layer of the liquid obtained after soaking, which contains floating black carbon, is then filtered through filter paper, and the carbon particles on the filter paper are rinsed with water; the bottom of the liquid obtained after soaking contains precipitates such as silicates, which must not be poured onto the filter paper.

[0019] (3) drying the purified material: the purified material is dried in a drying oven at 130–150 °C for 1–2 hours.

[0020] As shown in Fig. 1, the high-temperature furnace used for carrying out step (1) of the process for extracting raw carbon material for biological diamonds of the present invention comprises a furnace body 3; the furnace body is provided therein with a thermal-insulation layer 4 and is covered on its upper part with an insulating cover 2; an air inlet 5 is opened in the lower part of the furnace body; a gas outlet 1 is opened in the insulating cover; and a support 6 is arranged inside the furnace body. A covered porcelain crucible containing human or animal skin appendages is placed on the support; the covered porcelain crucible is in a semi-sealed state so as to minimize contact with air and reduce carbon loss.

DRAWINGS

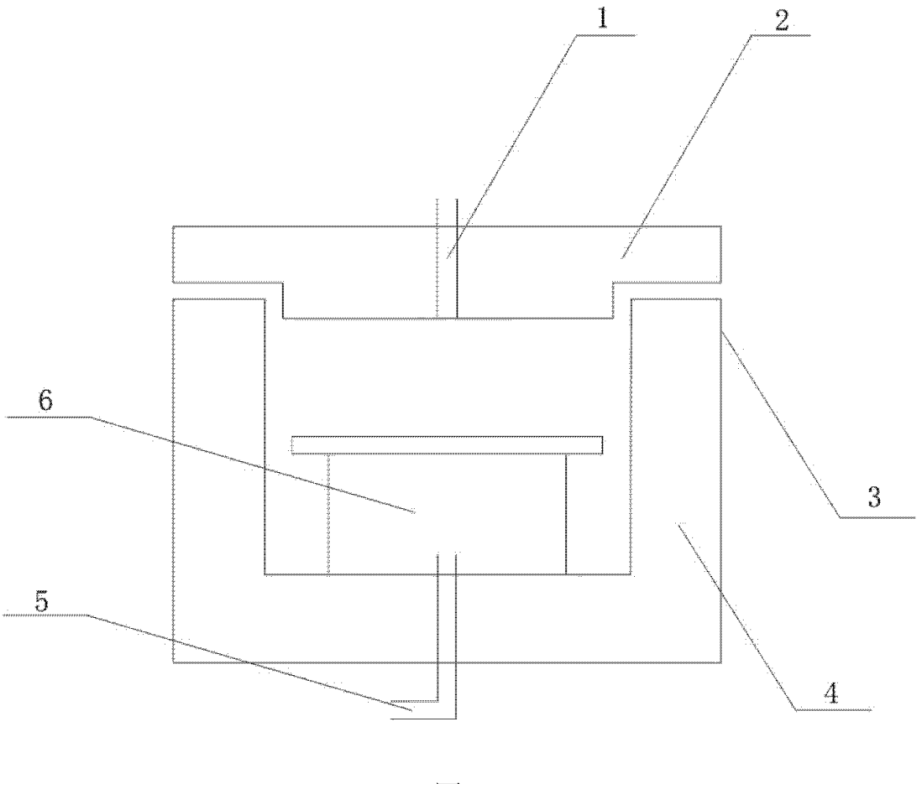

Fig. 1

1 — gas outlet; 2 — insulating cover; 3 — furnace body; 4 — thermal-insulation layer; 5 — air inlet; 6 — support.

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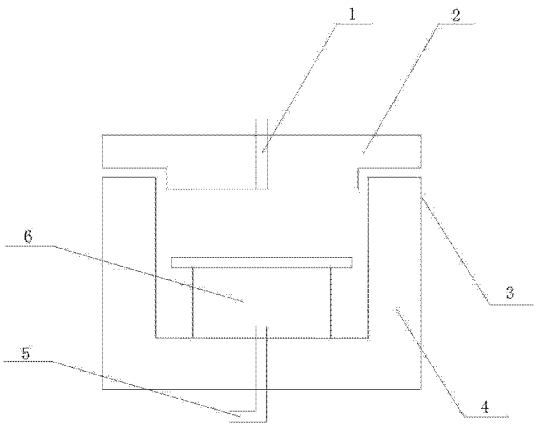
权利要求书 1 页 说明书 2 页 附图 1 页

(54)发明名称

一种生物体钻石原料碳的提取工艺方法

(57)摘要

本发明公开一种生物体钻石原料碳的提取工艺方法，其首先将人或动物皮肤附属物在惰性气体或氮气保护下进行高温碳化处理；然后将碳化后的材料采用化学方法去除杂质；最后将除杂后的材料干燥。本发明原料成本低，且方便取得，提取效率高，提纯效果好，能够制得纯净的碳，进而制成生物体钻石纪念品，具有特殊的情感寄托意义，以及良好的商业价值。



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1. 一种生物体钻石原料碳的提取工艺方法，其特征是：其包括以下步骤：

（1）、将人或动物皮肤附属物在惰性气体或氮气保护下进行高温碳化处理；

（2）、将碳化后的材料采用化学方法去除杂质；

（3）、将除杂后的材料干燥。

2. 根据权利要求 1 所述的生物体钻石原料碳的提取工艺方法，其特征是：其步骤（1）中高温碳化处理的步骤为：将皮肤附属物置于带盖瓷坩埚中，在通有惰性气体或氮气保护的高温炉中在 850~950℃下加热 10~15 分钟进行碳化处理，得到固体碳。

3. 根据权利要求 2 所述的生物体钻石原料碳的提取工艺方法，其特征是：惰性气体或氮气进气口压力保持在 0.3 ～ 0.5Mpa。

4. 根据权利要求 1 所述的生物体钻石原料碳的提取工艺方法，其特征是：其步骤（2）中采用化学方法去除杂质的步骤为：将碳化后的材料浸入混合酸中搅拌、浸泡，再将浸泡后得到的溶液的上层含黑色碳漂浮物的液体用滤纸过滤，并用水冲洗滤纸上的碳粒。

5. 根据权利要求 4 所述的生物体钻石原料碳的提取工艺方法，其特征是：混合酸由质量百分比浓度为 20%±5% 的稀硝酸与质量百分比浓度为 15%±5% 的稀盐酸按照 1:2~3 的体积比混合配成。

6. 根据权利要求 4 所述的生物体钻石原料碳的提取工艺方法，其特征是：碳化后的材料在混合酸中浸泡 3 ～ 5 小时。

7. 根据权利要求 1 所述的生物体钻石原料碳的提取工艺方法，其特征是：其步骤（3）中干燥的步骤为：将除杂后的材料在干燥箱中 130~150℃条件下干燥 1~2 小时。

8. 一种实施权利要求 1 所述的方法中的高温碳化处理步骤所用的高温炉，其包括炉体，其特征是：其炉体（3）内设有保温层（4），上部覆有保温盖（2），炉体下部开设有进气口（5），保温盖上开设有出气口（1），炉体内设置有支架（6）。

一种生物体钻石原料碳的提取工艺方法

技术领域

[0001] 本发明涉及一种生物体钻石原料碳的提取工艺方法，以人或动物皮肤附属物为原料提取碳，人或动物皮肤附属物包括人体或动物的毛发、指甲、趾甲或新陈代谢脱落的皮屑等附属物。

背景技术

[0002] 目前，钻石因其坚硬、稀有与均匀剔透璀璨夺目的视觉效果，而成为财富与荣耀的象征，用钻石制作的各种首饰深受人们喜爱。然而由于天然钻石的稀少，无法满足人们对钻石的需求，人造钻石也就应运而生。

[0003] 人造钻石一般采用石墨制作，因此，含碳的物质都可制作为钻石，碳的来源随处可得，比如空气中的二氧化碳直接还原出来就是碳，木材、煤炭等材料也含碳。所以制造钻石的材料可以说是无穷无尽。因材料不同，所要克服的技术难题也就各不相同。

发明内容

[0004] 为解决上述问题，本发明的目的是提供一种生物体钻石原料碳的提取工艺方法，其以人体或动物的毛发、指甲、趾甲或新陈代谢脱落的皮屑等附属物为材料，制得纯净的碳。

[0005] 为实现上述发明目的，本发明采用如下技术方案：

一种生物体钻石原料碳的提取工艺方法，其包括以下步骤：

(1)、将人或动物皮肤附属物在惰性气体或氮气保护下进行高温碳化处理；

(2)、将碳化后的材料采用化学方法去除杂质；

(3)、将除杂后的材料干燥。

[0006] 上述的生物体钻石原料碳的提取工艺方法中，其步骤(1)中高温碳化处理的步骤为：将皮肤附属物置于带盖瓷坩埚中，在通有惰性气体或氮气保护的高温炉中在850~950℃下加热10~15分钟进行碳化处理，得到固体碳。

[0007] 进一步地，惰性气体或氮气进气口压力保持在0.3～0.5Mpa。

[0008] 上述的生物体钻石原料碳的提取工艺方法中，其步骤(2)中采用化学方法去除杂质的步骤为：将碳化后的材料浸入混合酸中搅拌、浸泡，再将浸泡后得到的溶液的上层含黑色碳漂浮物的液体用滤纸过滤，并用水冲洗滤纸上的碳粒。

[0009] 进一步地，混合酸由质量百分比浓度为20%±5%的稀硝酸与质量百分比浓度为15%±5%的稀盐酸按照1:2~3的体积比混合配成。

[0010] 进一步地，碳化后的材料在混合酸中浸泡3～5小时。

[0011] 上述的生物体钻石原料碳的提取工艺方法中，其步骤(3)中干燥的步骤为：将除杂后的材料在干燥箱中130~150℃条件下干燥1~2小时。

[0012] 一种实施高温碳化处理步骤所用的高温炉，其包括炉体，炉体内设有保温层，上部覆有保温盖，炉体下部开设有进气口，保温盖上开设有出气口，炉体内设置有支架。

[0013] 由于采用如上所述的技术方案，本发明具有如下优越性：

本发明的生物体钻石原料碳的提取工艺方法，其原料成本低，且方便取得，工艺过程简单，操作简便，提取成本低，提取效率高，提纯效果好，碳提取率可达 10%~14%，能够制得纯净的碳，进而制成生物体钻石纪念品，具有特殊的情感寄托意义，以及良好的商业价值。

附图说明

[0014] 图 1 是高温炉的结构示意图；

图中：1 —出气口；2 —保温盖；3 —炉体；4 —保温层；5 —进气口；6 —支架。

具体实施方式

[0015] 通过以下实施例对本发明的技术方案作进一步详细说明。

[0016] 一种生物体钻石原料碳的提取工艺方法，其包括以下步骤：

（1）、将人或动物皮肤附属物在惰性气体或氮气保护下进行高温碳化处理：将人或动物皮肤附属物置于带盖瓷坩埚中，在通有惰性气体或氮气保护的高温炉中在 850~950℃下加热 10~15 分钟进行碳化处理，得到固体碳，惰性气体或氮气进气口压力保持在 0.3 ～ 0.5Mpa。

[0017] 碳化原理：所取得的生命材料皮肤附属物成分均为碳水化合物，在 900℃高温条件下碳化，其中的氢、氧、硫、磷等裂解挥发，碳在惰性气体或氮气的保护下（避免与空气中的氧气反应生成一氧化碳或二氧化碳逸出）被固定下来。

[0018] （2）、将碳化后的材料采用化学方法去除杂质：将碳化后的材料固体碳浸入混合酸中搅拌、浸泡 3 ～ 5 小时，混合酸由质量百分比浓度为 20%±5% 的稀硝酸与质量百分比浓度为 15%±5% 的稀盐酸按照 1:2~3 的体积比混合配成；再将浸泡后得到的溶液的上层含黑色碳漂浮物的液体用滤纸过滤，并用水冲洗滤纸上的碳粒；浸泡后得到的溶液的底部为硅酸盐等沉淀，不能倒入滤纸上。

[0019] （3）、将除杂后的材料干燥：将除杂后的材料在干燥箱中 130~150℃条件下干燥 1~2 小时。

[0020] 如图 1 所示，用于实施本发明生物体钻石原料碳的提取工艺方法的步骤（1）的高温炉，其包括炉体 3，炉体内设有保温层 4，上部覆有保温盖 2，炉体下部开设有进气口 5，保温盖上开设有出气口 1，炉体内设置有支架 6，支架上放置盛有人或动物皮肤附属物的带盖瓷坩埚，带盖瓷坩埚是半密封状态，尽量减少与空气的接触，以减少碳损失。

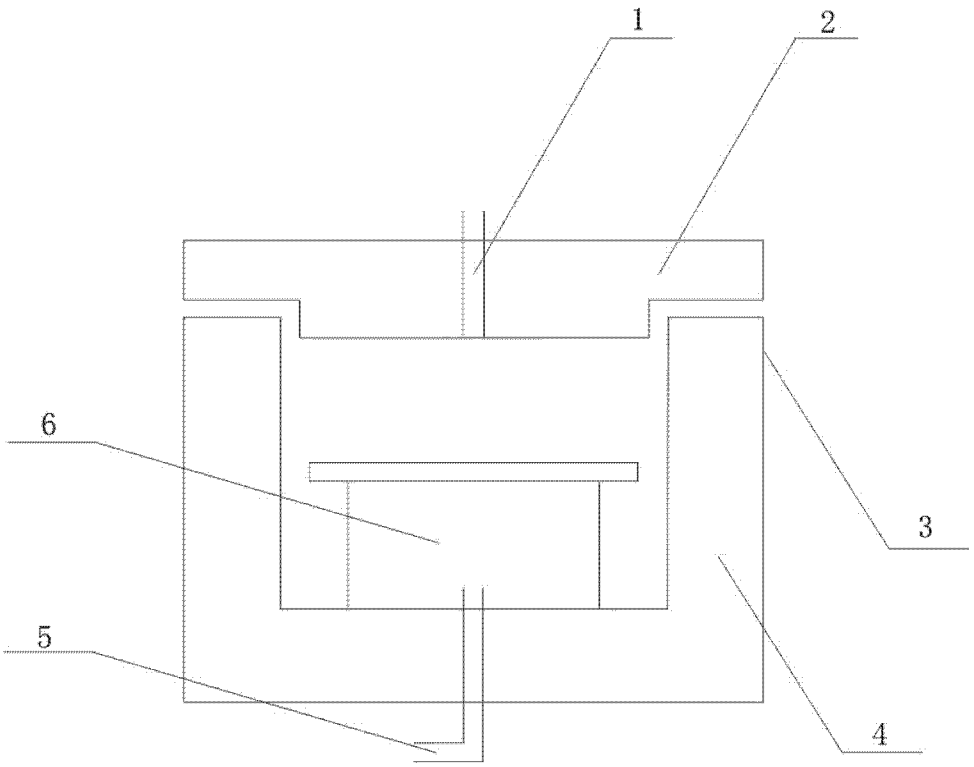

图 1