

★★★ <第33回知的財産翻訳検定試験【第16回英文和訳】> ★★★

<< 1 級課題 -化学->>

【解答にあたっての注意】

1. 問題の指示により和訳してください。
2. 解答語数に特に制限はありません。適切な箇所で行って改行してください。
3. 課題文に段落番号がある場合、これを訳文に記載してください。
4. 課題は4題あります。それぞれの課題の指示に従い、4題すべて解答してください。

<翻訳に際しての注記>

翻訳文だけを読んでも内容を正確に且つ容易に理解できるよう、文書として自然な翻訳を心がけてください。必要であれば、内容の正確性が担保される限りにおいて、一文を区切って二文で表現するなど、工夫を凝らしていただいても構いません。

問1. 下記英文を日本語に翻訳してください。

The sensor systems in which electrochemical techniques are used for analysis are called electrochemical sensors. Electrochemical sensors allow the analysis of target (bio)molecules in a rapid and practical way. Electrochemical techniques are preferred by researchers compared to other techniques such as optics and piezoelectrics of the prior art, as they can carry out sensitive and selective detection and at the same time they can be miniaturized and can analyse the analyte (on-line), even from complex samples. In the patent application TR2018/XXX, the development of electrochemical sensors from the carbon rods recycled from the waste dry batteries for the analysis of various materials has been described. This carbon material allows the insertion of a copper wire through it and is cut in the shape of a disk and graphene and polymer material has been added onto its surface. Trinitrotoluene determination has been carried out with square wave voltammetry (SWV) technique. In the patent application TR2016/XXX, the gold electrode modified with P(DTP-Ph-NH₂) conductive polymer/Cytochrome C/Thylacoid is used as the photo anode, and the gold electrode that is functionalized with the P(DTP-Naphthyl-NH₂) conductive

polymer/bilirubin oxidase enzyme is used as the cathode. By connecting these two electrodes to each other by a cable, a biosensor has been developed to be used for the determination of pesticides in domestic and industrial wastewater of the solar cell that generates electricity.

問 2. 下記英文を日本語に翻訳してください。

The treating agents used to treat filler (ii) may be selected from one or more of, for example, organosilanes, polydiorganosiloxanes, or organosilazanes, hexaalkyl disilazane, short chain siloxane diols, a fatty acid or a fatty acid ester such as a stearate to render the filler (s) hydrophobic and therefore easier to handle and obtain a homogeneous mixture with the other components. Specific examples include but are not limited to liquid hydroxyl-terminated polydiorganosiloxane containing an average from 2 to 20 repeating units of diorganosiloxane in each molecule which may optionally contain fluoro groups and or fluoro containing groups, if desired, hexaorganodisiloxane, hexaorganodisilazane, and the like. A small amount of water can be added together with the silica treating agent (s) as processing aid. The surface treatment of the fillers makes them easily wetted by polymers (i) and (i) (a) if the latter is present. These surface modified fillers do not clump and can be homogeneously incorporated into polymers (i) and (i) (a) resulting in improved rheological behavior, such as lower viscosity and higher stability in viscosity during storage of the uncured compositions and improved room temperature mechanical properties of the cured compositions.

問 3. 下記英文を日本語に翻訳してください。

(a) N-Carbobenzyloxy-4-hydroxy-L-proline

26.5 g. (0.02 mole) of 4-hydroxy-L-proline and 32.8 ml. (0.23 mole) of benzyl chloroformate are reacted in 200 ml. of water and 100 ml. of acetone in the presence of 20 g. (0.02 mole) of potassium bicarbonate and 69.2 g. (0.50 mole) of potassium carbonate and worked up with 90 ml. of concentrated hydrochloric acid as described in Reference A to obtain N-carbobenzyloxy-4-hydroxy-L-proline. This product is reacted with

cyclohexylamine to form the cyclohexylamine salt yield 69 g., m.p. 193°C-195°C. The salt (34 g.) is neutralized with N-hydrochloric acid to obtain 27 g. of free acid as a colorless glass.

(b) N-carbobenzyloxy-4-keto-L-proline

21.5 g. (0.81 mole) of N-carbobenzyloxy-4-hydroxy-L-proline is oxidized in 1.2 liters of acetone with 83 ml. of 8 N chromic acid in sulfuric acid. In order to facilitate the subsequent filtration of chromium salts, 30 g. of Celite® is added to the acetone solution before introduction of the oxidizing agent. An air stirrer is employed. The reaction mixture is filtered and the acetone filtrate is concentrated to approximately 300 ml. before diluting with 1 liter of chloroform. The solution is washed with 300 ml. of saturated sodium chloride (four times), dried (MgSO₄), filtered and the solvent evaporated to give N-carbobenzyloxy-4-keto-L-proline (22.8 g.) which is crystallized from ether (50 ml)-hexane (150 ml) to obtain 17.2 g. (81%) of product, m.p. 99°C-101°C.

問4. 下記の*** START ***, *** END ***の間の英文を日本語に翻訳してください。

***** START *****

1. A method of producing boron nitride nanotubes, the method comprising:
 - a. providing an integrated production apparatus, the apparatus comprising: a pressurized reaction chamber containing a continuously fed boron containing target having a boron target tip, a source of pressurized nitrogen and a moving belt condenser apparatus including a belt surface; a hutch chamber proximate the pressurized reaction chamber containing a target feed system wherein the target feed system provides a continuously fed boron containing target to the pressurized reaction chamber, a nitrogen control system in communication with the pressurized nitrogen; a laser beam and optics wherein the optics direct the laser beam through a laser beam tube, the hutch and into the pressurized reaction chamber; and a safety shield positionable to surround at least a portion of the pressurized chamber;
 - b. providing nitrogen gas to the pressurized reaction chamber to

maintain a pressure of about 150 to 200 psi in the pressurized reaction chamber;

c. providing a laser beam and maintaining a laser power of about 1000 to about 2500 W;

d. directing the laser beam to the tip of the boron target; and

e. collecting boron nitride nanotubes on the belt surface of the moving belt condenser apparatus.

***** END *****

参考用の明細書部分（問題文ではありませんので翻訳不要です。）

[0018] Referring to FIG. 1 which is a schematic drawing of one embodiment of the integrated production apparatus for production of boron nitride nanotubes via the pressure vapor-condenser method. The apparatus comprises a pressurized reaction chamber 16, a hutch chamber 20 proximate the pressurized reaction chamber 16, a laser beam 12, and a sliding safety shield 2. The hutch chamber 20 further comprises a target feed system 9, an optical bench 15, gas pressure and flow controls 13 and electronic controls 14. The target feed system 9 provides for supporting and continuously feeding a boron target 36 into the pressurized reaction chamber 16. The gas pressure and flow controls 13 comprise a needle valve, pressure gauge and a regulator and are used for admitting nitrogen into the system and regulating the flow of nitrogen to maintain pressure in the pressurized reaction chamber 16. Flow rate is monitored by a chamber exhaust meter (not shown). The electronic controls 14 provide for control of the target feed system 9, control of the boron target 36 position and feed rate and laser beam 12 manipulation. During operation of the apparatus the operator may adjust the flow rate, pressure, laser power, laser focus, feed rate of the boron target 36, and position of the boron target 36 by adjusting one or more appropriate gas pressure and flow control 13 and/or one or more appropriate electronic control 14. The electronic controls 14 also provide for the control and adjustment of the rate of motion and position of the moving belt condenser (not shown in FIG. 1) in the pressurized chamber 16.

[0023] The pressurized reaction chamber 16 is pressurize by admitting

nitrogen via nitrogen supply line 7 and valve 34 into the pressurized reaction chamber 16. In one representative embodiment, the nitrogen gas is maintained at a pressure of about 150 to about 200 psi. The introduction of nitrogen is controlled by a nitrogen control system.

[0024] Hot boron vapor is formed as the laser beam 12 vaporizes the boron target tip 31 of the boron target 36 and the boron vapor mixes with the nitrogen gas which dissociates to atomic nitrogen under the conditions present in the pressurized reaction chamber 16. The mixture of vaporized boron and nitrogen travels toward the continuous belt condenser 29. The continuous belt condenser 29 is has a moving belt 37 with a belt surface 30. In a preferred embodiment, both the position of the continuous belt condenser 29 and the rate of movement of the belt 37 are adjustable. The belt surface 30 acts as a filament nucleation site.

参考図

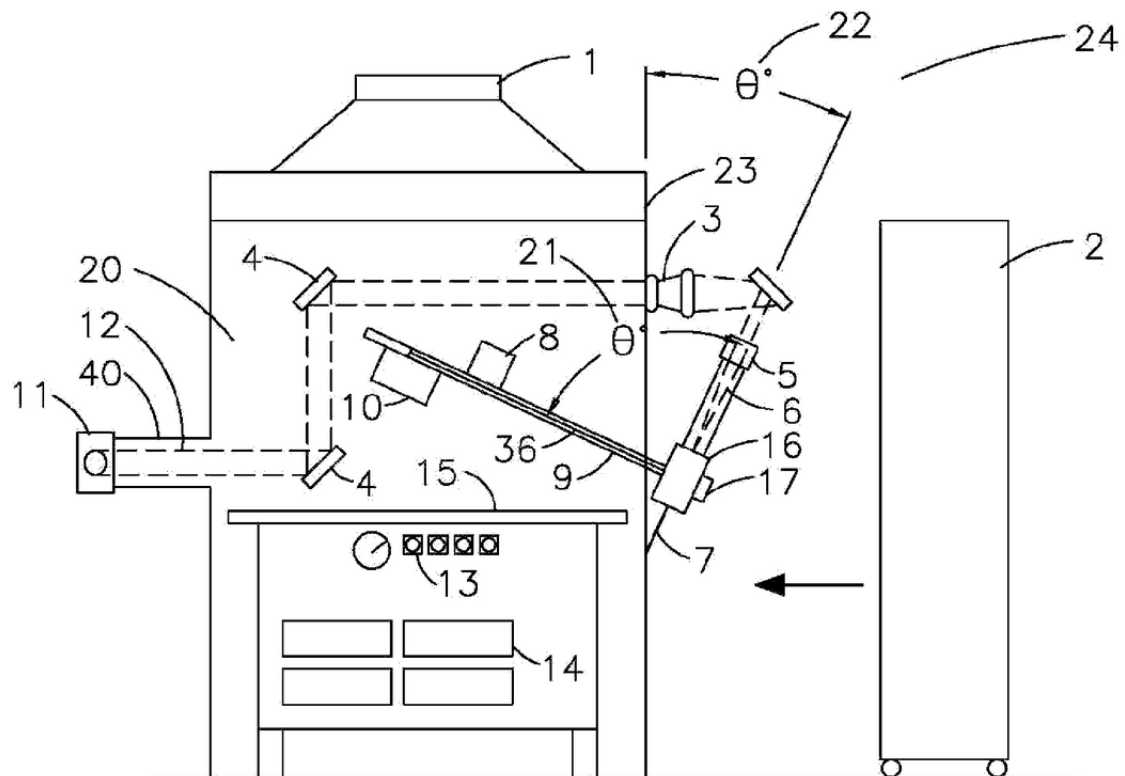


FIG. 1

