

★★★<第15回知的財産翻訳検定試験【第7回英文和訳】>★★★

<<1級課題 -化学->>

【解答にあたっての注意】

1. ***START***から***END***までを和訳してください。
2. 解答語数に特に制限はありません。
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。

問1. 次の米国特許明細書中の背景技術にかかわる記載内容について翻訳しなさい。

START

The use of photovoltaic cells for the direct conversion of solar radiation into electrical energy is well known, see Swanson, U.S. Pat. No. 4,234,352 for example. Briefly, the photovoltaic cell comprises a substrate of semiconductive material having a p-n junction defined therein. In the planar silicon cell the p-n junction is formed near a surface of the substrate which receives impinging radiation. Radiated photons create mobile carriers (holes and electrons) in the substrate which can be directed to an electrical circuit outside of the cell. Only photons having at least a minimum energy level (e.g., 1.1 electron volt for silicon) can generate an electron-hole pair in the semiconductor pair. Photons having less energy are either not absorbed or are absorbed as heat, and the excess energy of photons having more than 1.1 electron volt energy (e.g. photons have a wavelength of 1.1 micrometer and less) creates heat. These and other losses limit the efficiency of silicon photovoltaic cells in directly converting solar energy to electricity to less than 30%.

END

問2. 次の米国特許明細書中の実施形態にかかわる記載内容について翻訳しなさい。

START

In one aspect, the invention provides a nanoparticle complex that includes a nanoparticle and a plurality of amphiphilic polymers, wherein a portion of the amphiphilic polymers have pendant groups that are capable of becoming positively charged. In the complexes of the invention, the nanoparticle is encapsulated (e.g., belted) by the amphiphilic polymer. Through the selection and modification of the amphiphilic polymer, the complex can be functionalized for a desired purpose including, for example, therapeutic agent delivery and/or imaging.

Representative nanoparticles that can be incorporated into the complex include quantum dots (i.e., semiconductor nanoparticles), metal nanoparticles, metal oxide nanoparticles, metalloid nanoparticles, metalloid oxide nanoparticles, polymer nanoparticles, silica nanoparticles, nanoscale micelles, nanoscale liposomes, and clusters and combinations thereof. As used herein, the term "nanoscale" refers to a particle having at least one nanoscale (up to 1000 nm) dimension. In one embodiment, the nanoparticle is a magnetic nanoparticle. Representative magnetic nanoparticles include metal nanoparticles, metal oxide nanoparticles, metalloid nanoparticles, metalloid oxide nanoparticles.

END

問3. 次の米国特許明細書中の実施例にかかわる記載内容について翻訳しなさい。

START

5-Bromo-1,3-difluoro-2-[(R)-3-methylpentyl]benzene (3)

0.4 g of 5% polyvinyl chloride (dry) is added to a solution of 1.8 g (5.9 mmol) of 5-Bromo-1,3-difluoro-2-[(R)-3-methylpent-1-enyl]benzene in 0.50 ml of heptane, and the mixture is hydrogenated at atmospheric pressure for 20 hours. The solvent is removed under reduced pressure, and the entire amount is converted into 4.

3,5-Difluoro-4-[(R)-3-methylpentyl]phenyl]phenylboronic acid (4)

3.3 ml (5.5 mmol) of 1.6 M BuLi are added dropwise at -78 degrees C to a solution of 1.4 g (5 mmol) of 3 in 5 ml of dry diethyl ether. After 30 minutes, 0.6 ml (5.5 mmol) of trimethyl borate is added dropwise. The mixture is allowed to warm to room temperature overnight, 5.2 ml of water, 5.2 ml of methyl tert-butyl ether and 3 ml of conc. HCl are subsequently added. The organic phase is washed with water (2 x 3 ml) and sat. NaCl (1 x 3 ml) and dried using magnesium sulfate, and the solvent is removed under reduced

pressure. The residue is filtered through SiO₂ (heptane/dichloromethane 1:1), (yield: 0.8 g, 70%).

END

問4. 次のクレームを翻訳しなさい。

START

1. A multi-polymer hydrogel article comprising a first polymeric, water-swella-ble material and a second polymeric material, wherein a first region of the article substantially comprises the first polymeric, water-swella-ble material, a second region adjacent the first region comprises a mixture of the first polymeric, water-swella-ble material and the second polymeric material, and a third region adjacent the second region substantially comprises the second polymeric material, and wherein the second polymeric material exhibits an increasing concentration gradient moving from the first region, through the second region, to the third region.
2. The multi-polymer hydrogel article of claim 1, wherein the second polymeric material is a water-swella-ble material. (104 words)
3. The multi-polymer hydrogel article of claim 2, wherein the water-swella-ble second polymeric material is at least one of a hydrophilic polymer, a homopolymer, a combination of a hydrophilic polymer and a hydrophobic polymer, a blend of polymers, a copolymer, or a thermoplastic material, or combinations thereof.
4. The multi-polymer hydrogel article of claim 2, wherein the water-swella-ble second polymeric material is selected from the group consisting of polymers of polyvinyl alcohol, polyglycols, polyethylene glycol dimethacrylate, polyethylene glycol diacrylate, polyhydroxyethyl methacrylate, polyvinyl pyrrolidone, polyacrylamide, polyacrylic acid, hydrolyzed polyacrylonitrile, polyethyleneimine, ethoxylated polyethyleneimine, polyallyl alcohol, and polyallylamine, and combinations thereof.

END