★★★ ＜第25回知的財産翻訳検定試験【第12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。

問１．以下のクレームを和訳してください。（2. ～6. は問題範囲外なので省略しました。）

1. An extrusion-coated structural system comprising: an extrusion-coated structural member comprising at least one substrate and a coating material extrusion coated onto at least a portion of said substrate, wherein said extrusion-coated structural member further comprises an extruded profile member formed of said coating material, wherein said extruded profile member extends outwardly from said substrate for a maximum distance that is at least two times greater than the average thickness of said coating material coated onto said substrate adjacent said extruded profile member.
7. The structural system of claim 1, wherein said extrusion-coated structural member further comprises a profile recess at least partially defined by said extruded profile member.

問２．以下の Background of the Invention を和訳してください。（文中の***は文献名を省略した印ですので、無視して翻訳して結構です。）

In recent years, there has been increasing interest in the development of so-called "intelligent" or "smart" materials whose properties change in response to such environmental conditions as ionic strength, temperature, and magnetic- or electric-fields. The ability to control the structure and therefore the function of materials by application of external stimuli forms the basis of molecular machines, chemical valves and switches, sensors, and a wide range of optoelectronic materials.

Considerable effort is being expended to develop smart materials which can serve as vehicles to transport biological and non-biological materials. One such material is composed of a mixture of lipids, a low molecular weight polyethylene glycol-derived polymer lipid, and a pentanol surfactant. *** These gels change to a liquid by heating to a higher temperature. However, both the pentanol surfactant and elevated temperatures cause rapid degeneration of incorporated proteins and other biomolecules in the materials. Also, the material appears to undergo phase separation at reduced temperature. Lastly, the material does not seem to react to external stimuli other than temperature variations.

問３．以下の実施形態の説明を和訳してください。

Conjugated polymer derivatives with COOH endgroups mentioned above are a new concept in OSCs. They have appeared before in the photoactive layer, but not as interfacial modifiers. In the most advantageous arrangement, a conjugated polymer is used as an electron donor in the photoactive layer, and its COOH-modified counterpart is used as the interfacial modifier. In this case, the backbone structures are similar, which ensures appropriate energy levels for charge transport between the two materials. Moreover, these COOH-modified derivatives automatically have desirable solubility properties: high solubility in some polar solvent such as pyridine and DMSO, while they have poor solubility in chloroform, chlorobenzene and dichlorobenzene. Thus, the COOH-functionalized polymers are amenable to casting of additional overlayers from solvents commonly used for the photoactive layer (such as chloroform, chlorobenzene and dichlorobenzene). The COOH-termination (or other groups) may also reduce the surface energy of cast films, preventing the detrimental effect of

vertical phase separation and the accumulation of PCBM near the anode.
（以下省略）

（注）　OSC: organic solar cell
DMSO: dimethyl sulfoxide
PCBM: [6,6]-phenyl-C_{61}-butyric acid methyl ester

問４．以下の実施例の説明の下線部を和訳してください。

A continuously stirred stainless steel reactor was charged with 42.452 kg of isophorone diisocyanate (IPDI) and a solution of 28 g of Inhibitor T, 19 g of benzoquinone and 37 g of toluhydroquinone (sometimes called methylhydroquinone) in 460 g of methyl methacrylate. This mixture was warmed to 45° C. and a solution of 10 g Fascat 4202CL in 442 g methyl methacrylate added. <u>Gradually, 66.542 kg of Bisomer PPM5 was fed into the reactor, the reaction exotherm taking the temperature up to 61.5° C. This feed took 90 minutes to complete. After a further 30 minutes at 61.5° C., the isocyanate content was found to be 6.8%. The temperature of the reactor was raised to 80.0° C. and a solution of 19 g of Fascat 4202CL in 433 g of methyl methacrylate was added. 17.033 kg of Simulsol PTKE was then fed gradually to the reactor over a period of 75 minutes, keeping the temperature in the reactor between 80° and 85° C. Any residual Simulsol PTKE remaining in the feed vessel was then rinsed into the reactor with a further 7.562 kg of methyl methacrylate. One hour later, the isocyanate content of the reactor contents was measured and found to be 0.16%. 45.010 kg of methyl methacrylate was stirred into the reactor contents to give the product, urethane acrylate resin UA-2, with a theoretical oligomer content of 70.8%, the balance being 29.2% methyl methacrylate. This was cooled back to normal ambient temperature before decanting. It had a viscosity of 7.0 Poise and a density of 1.0461 gcm^{-3}.</u>