★★★ ＜第35回知的財産翻訳検定試験【第17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．下記の*** START ***, *** END ***の間の英文を日本語に翻訳してください。

[0011] The aluminum to be recycled is melted down in smelting furnaces and cast into various semi-finished products. When aluminum is melted down, impurities, localized overheating and the oxide layer on the starting material cause metal losses, aluminum dross. In Germany alone, this results in approximately 40,000 tons of metal losses per year. *** START *** Aluminum dross consists mainly of aluminum oxide and aluminum. The metal content of aluminum dross amounts to 50-70%. The aluminum is bound in the Al2O3 framework as in a sponge.

[0012] The aluminum dross floats on the molten pool. At this point, the aluminum dross has an insulating effect and prevents further heat input into the molten pool. Furthermore, aluminum dross, when sufficient oxygen is available, tends to burn. Thus, for the above reasons, it is necessary to skim the aluminum dross and remove it from the molten pool. Skimming machines are typically used for skimming. The skimming machine is positioned in front of the opened melting furnace and a movable arm with a blade moves into the melting furnace. The blade is lightly dipped into the molten pool and the aluminum dross is successively pulled in the direction of the furnace opening and initially deposited on the furnace barrier (“sill”). The goal of depositing is to have some of the molten aluminum flow back into the melting furnace. Subsequently, the aluminum dross is pulled into buckets in front of the melting furnace. *** END ***

問２．下記の*** START ***，*** END ***の間の英文を日本語に翻訳してください。

[0062] In one or more embodiments, a combinatorial approach can provide parallel (or pseudo-parallel) synthesis of a large number (e.g., tens, hundreds, thousands, etc.) of samples of different material compositions comprised of multiple elements (e.g., at least two, such as three or more), thereby saving tremendous time and effort. In some embodiments, all of the samples (or at least a subset thereof) can be provided on a common substrate, for example, for part of the synthesis process (e.g., simultaneous or sequential thermal shock of each sample spot on the substrate) and/or subsequent screening (e.g., simultaneous or sequential testing of each sample spot on the substrate). *** START *** After synthesis, high throughput screening can rapidly acquire data indicative of one or more properties of these compositionally different multielement materials (e.g., nanoparticles, nanoclusters, or functional bulk materials). By combining combinatorial synthesis and high throughput screening, rapid material discovery and exploration in new multielement dimensions becomes possible.

[0063] One or more embodiments can include (a) multielement composition design, (b) a combinatorial precursor mapping for a large number (e.g., at least 20, at least 50, at least 100, or at least 1000) of different compositions, (c) thermal shock heating that synthesizes materials with similar structures (e.g., particle size, particle dispersion density, single phase, homogeneous distribution, etc.) despite otherwise different compositions; and (d) high throughput screening of compositionally different samples with respect to targeted properties. In some embodiments, the multielement composition design can comprise selection of particular elements for combination (e.g., from a subset of Pt, Pd, Rh, Ru, Ir, Fe, Co, Au, Mn, and Ni) and/or selection of number of elements per particle (e.g., three elements per particle) or a range of number of elements per particle (e.g., in a range of three to eight elements per particle). *** END ***

問３．下記実施例の写真図を参照している説明英文を日本文に翻訳してください。なお、本問ではイメージ画像中の英語（Magnification その他、テキスト形式ではない文言）の翻訳は不要です。

FIGS. 5A-5D further illustrate a comparison of the cell structure of the foam bubbles of the conventional fire-fighting composition sample, as shown in FIGS. 5A and 5C relative to the foam bubbles of the expandable fire-fighting composition sample of the disclosure, as shown in FIGS. 5B and 5D. As shown in the figures, it is noted that the wall thickness of the conventional foam bubble appears to be thinner in structure than the fire-fighting composition of the disclosure's bubbles' wall thickness. In addition, there is also visible separation between the bubbles of the conventional fire-fighting composition opposed to the expandable fire-fighting composition bubbles of the disclosure, which are much closer and tighter packed together due to the over pressurization (saturation) during the manufacturing process. For example, as shown in FIG. 5C, the conventional foam sample bubbles appear next to each other with visible gaps in-between them. In contrast, as shown in FIG. 5D, the expandable firefighting foam composition bubbles of the disclosure are shown closely and tightly packed together with no visible separation between them, which was achieved via the manufacturing method and system of the disclosure described herein.

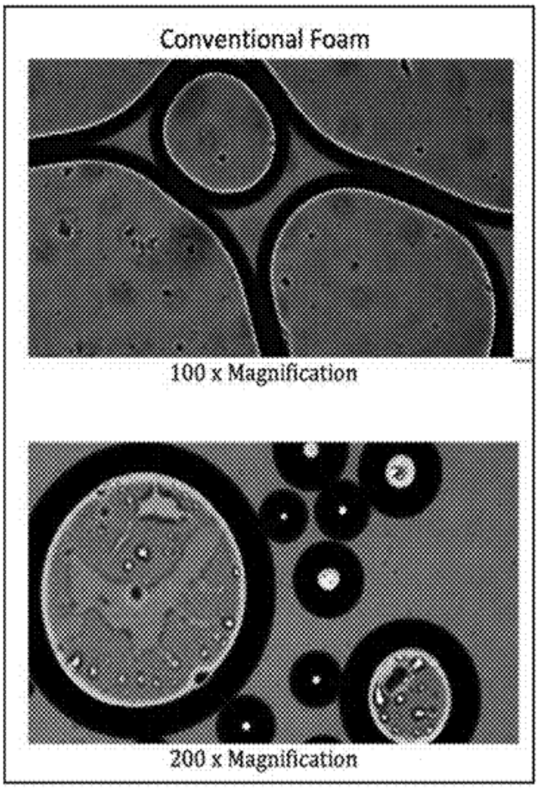

FIG. 5A

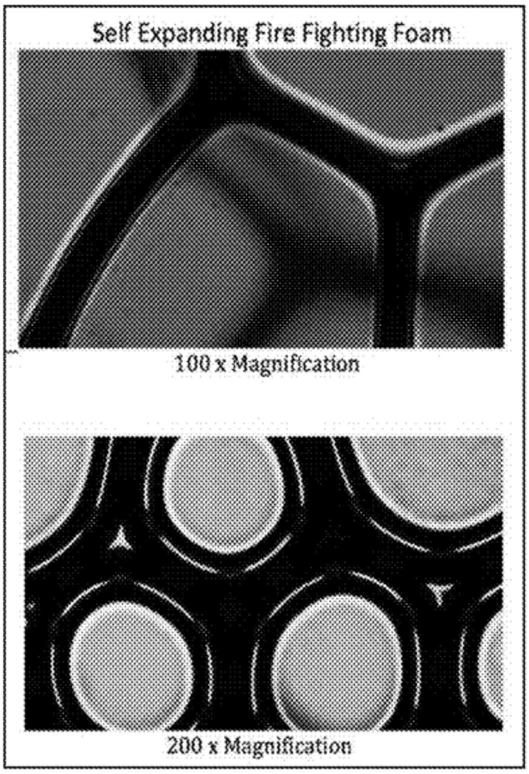

FIG. 5B

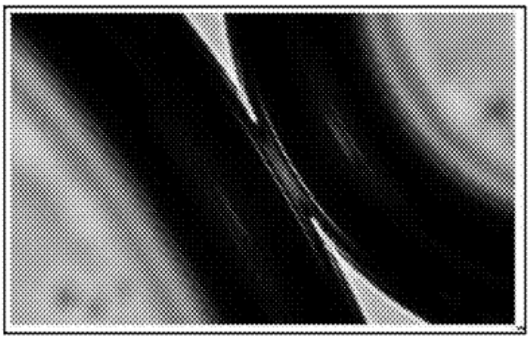

FIG. 5C

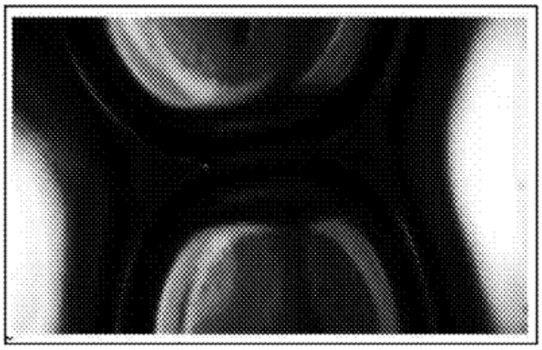

FIG. 5D

問４．下記の英文クレームを日本語に翻訳してください。

1. A method of measuring acetone in a subject's breath, said method comprising obtaining a sample of the subject's breath; combining said sample with a fluorophore that exhibits a change in fluorophore spectral properties upon interaction with acetone and allowing any acetone in said sample to interact with said fluorophore; and determining an amount of acetone in said sample based on alteration of spectral properties of said fluorophore, wherein said acetone being detected directly chemically interacts with the fluorophore and any change in said fluorophore spectral properties is from the direct chemical interaction of said acetone with said fluorophore, and wherein the detection does not involve any intermediate chemical reactions of acetone with anything else other than the fluorophore.
2. The method of claim 1, wherein the fluorophore is selected from the group consisting of Nile Red, Badan (6-Bromoacetyl-2-Dimethylaminonaphthalene), Prodan (1-[6-(dimethylamino)naphthalen-2-yl]propan-1-one), Laurdan (6-Dodecanoyl-N,N-dimethyl-2-naphthylamine), and derivatives thereof.
3. The method of claim 1, wherein the fluorophore is immobilized on the surface of a substrate.
4. The method of claim 3, wherein said substrate is selected from the group consisting of fused silica, quartz, PMMA, polyethylene, fluoride-doped polyethylene or PMMA, optical glass and silica gels.