

PATENT COOPERATION TREATY

From the:
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing (*day/month/year*)
03 July 2017

Applicant's or agent's file reference
Diamond2

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/MY2017/050014

International filing date (*day/month/year*)
04 April 2017

Priority date (*day/month/year*)
22 February 2017

International Patent Classification (IPC) or both national classification and IPC
C12H 1/12 (2006.01) C02F 1/48 (2006.01)

Applicant
DIAMOND STAR GLOBAL SDN. BHD

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA

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Date of completion of this opinion
3 July 2017

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Box No. I **Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of:
 - The international application in the language in which it was filed
 - A translation of the international application into, , which is the language of a translation furnished for the purposes of international search (under Rules 12.3(a) and 23.1(b)).
2. This opinion has been established taking into account **the rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
 - on paper
 - in electronic form
 - b. (time)
 - in the international application as filed
 - together with the international application in electronic form
 - subsequently to this Authority for the purposes of search
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-10	YES
	Claims NONE	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-10	NO
Industrial applicability (IA)	Claims NONE	YES
	Claims 1-10	NO

2. CITATIONS AND EXPLANATIONS:

CITATIONS

D1: US 2012/0125831 A1 (HUANG) 24 May 2012
D2: US 2008/0169232 A1 (LEE) 17 July 2008
D3: US 2009/0230032 A1 (FLICK) 17 September 2009

NOVELTY (N)

Claims 1-10 meet the criteria for novelty under PCT Article 33(2) because the subject matter claimed is not disclosed in the prior art.

None of the prior art documents cited explicitly or inherently disclose a method for improving organoleptic properties of a beverage comprising: pouring magnetized liquid into a container; and placing the beverage within said container, or, a system (apparatus) suitable for improving the organoleptic properties of a beverage comprising: a magnetized liquid and a beverage within a container.

INVENTIVE STEP (IS)

Since the promise of the invention has been found to lack credibility, any liquid having been magnetized by the process of the description referred to as a "magnetized liquid", will be considered suitable for and to be inherently capable of indirectly improving organoleptic properties of beverages by modification of tannins structures and content, as well as to inherently comprise the properties asserted by the applicant (please refer to the clarity objection).

Claims 1-10 lack an inventive step under PCT Article 33(3) because the subject matter is considered obvious in view of any one of D1-D2 when combined with D3.

The invention defined in claims 1-10 does not involve an inventive step when the disclosures of any one of D1-D2 are combined with the disclosure of D3.

The problem addressed by the current application is to improve the organoleptic properties of a beverage using a magnetic field.

Regarding claims 1, 4, 6-8 & 10, D1 discloses a method and apparatus for producing a magnetized liquid (abstract & Figs 1-2), comprising: passing the liquid (feed line 2) through ceramic ball-shaped ion-exchange material (refer to clarity objection; calcium-ion beads 324 that generate negative ions - paragraph [0039]); adding alkalizing minerals (calcium-ion beads alkalize the liquid and far infrared material 42 may comprise mineral stone - paragraphs [0039-40]) to the liquid; subjecting the liquid to ceramic material (again, see clarity note; far infrared material 42 such as ceramic stone, wherein ceramic stones are considered equivalent to ceramic balls & far infrared ceramic sheet 71; paragraphs [0040] & [0047]); and passing the liquid through a magnetic field formed by magnetized medium (again, refer to clarity note regarding "magnetized balls" in particular; magnets 55 & magnetized circular sheets 61; paragraphs [0042-46] & [0051]). Regarding claims 6 & 10 in particular, as discussed previously (disregarding the issues of credibility), it is considered inherent that the method and system of D1 results in magnetized water having increased viscosity and water vaporization rate and reduced water tension.

Similarly, D2 discloses a method and apparatus for producing a magnetized liquid and is relevant in particular to claims 1, 4, 6-8 & 10 (see abstract; Figs 1-4 with items including ceramic material tube 30 of Fig 4, tourmaline ball shaped ion-exchange

material 33 of Fig 4, FIR emitting and alkalizing bio ceramic balls 32 of Fig 4, magnets M & M1 of Fig 4, steps 302 & 309 of Fig 2; paragraphs [0006], [0015], [0018-21] & [0033-35]).

The claimed invention of claims 1, 4, 6-8 & 10 is distinguished from either of D1 or D2 in that the magnetized liquid is poured into a container and a beverage is placed into said container for the purpose of improving the organoleptic properties of said beverage.

D3 discloses placing a beverage (Fig 1, 16) into a container (Fig 1, 30) for the purpose of improving the organoleptic properties of said beverage using magnetic field effects (abstract & paragraph [0025]). D3 further discloses a treatment device for both cooling and indirectly magnetically treating liquid within a container (title; abstract; Figs 1-2) comprising: beverage (16) within another container (15) which is held and treated for a predetermined time within open ended container (container holder 30) such that the organoleptic properties of the beverage are improved by modification of the tannins as a result of the magnetic field (see paragraphs [0001-2], [0005], [0008], [0011], [0024-27]; claim 1).

It is considered that a person skilled in the art (PSA) would, in seeking a solution to the problem being addressed, be motivated to combine the disclosures of any one of D1-D2 with D3 and arrive at a solution which is the same as the claimed invention. It is considered that the documents cited are from similar technical fields and all relate to the use of magnetic fields to modify the properties of liquids. If the PSA believed that the magnetized liquid of either of D1 or D2 could impart the same effects of a magnetic field, then it would be obvious to substitute treatment using the permanent magnets of D3 (Fig 1, magnets 40) with pouring a magnetized liquid into the container (D3 - Fig 1, 30) as this would not only provide the asserted benefit in terms of indirectly improving the organoleptic properties of the beverage (D3 - Fig 1, 16) but also result in better heat transfer to simultaneously cool the beverage more effectively.

Furthermore, the appended features of claims 2-3, 5 & 9, relating to the beverage being stored in another container within the closed or open ended container for the magnetized liquid, and the organoleptic properties of the beverage being improved by modification of tannins structures and content, are further disclosed in D3 as discussed in the objection above (please refer to the disclosures of D3 above).

INDUSTRIAL APPLICABILITY (IA)

The invention defined by claims 1-10 does not meet the requirements of Industrial Applicability under Article 33(4) of the PCT. For the claimed invention to have industrial applicability, it must have a specific, substantial and credible utility.

The application is not considered credible because the person skilled in the art would consider the assertions made by the application to be incredible in view of contemporary knowledge. The invention contravenes known laws of nature.

The primary assertions made by the application are that: water is "magnetized" and as a result can impart electromagnetic energy onto other objects, (title; page 3, lines 16-23; page 4, lines 9-16; page 6, lines 3-15; page 7, line 22-page 6, line 6; page 8, lines 17-26; page 10, lines 5-14; Figs 1-3), and that said electromagnetic energy has the effect of improving organoleptic properties of beverages by modification of their tannins (title; page 1, lines 6-24; page 3, lines 3-9 & 25-26; page 4, lines 1-7 & 18-19; page 6, lines 3-9; page 7, line 27-page 8, line 6; page 8, lines 22-26; page 10, lines 16-24).

The following are well-established principles relating to the concept of magnetism:

- Water is weakly diamagnetic (repelled slightly by either pole of a magnetic field) and some of its properties are affected while under the influence of a strong magnetic field. The particular effects and reasoning is still disputed within the scientific community including the influence of the magnetic field on water surface tension, viscosity, vaporization rate and hardness. However, it is established that the effects of the magnetic field do not permanently alter the properties of water, nor can water that has previously been subjected to a magnetic field impart any effects of a magnetic field onto other substances.
- Tannins are large, complex, weakly acidic, biological molecules found in plant material including grape skins and leaves and hence in wine. The properties of tannin molecules are not affected by magnetic fields. Furthermore, there is no credible evidence that electromagnetic energy has any effect on organoleptic properties of any beverage.

The application makes further incredible assertions including: ion-exchange medium in the form of "negative ion ceramic balls" continuously produce negative ions (page 9, lines 7-10); and "Far Infrared Rays (FIR) ceramic balls" passively and continuously emit far infrared energy (page 9, lines 20-25).

The following are well-established principles relating to the concepts of ceramic materials, ion-exchange and far infra-red radiation:

- Ceramic materials are typically comprised of atoms linked by a combination of covalent and ionic bonds. Ceramics are not capable of passively releasing negative ions which are part of their molecular structure.

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- The process of ionization is the addition or removal of an electron to create an ion. Ionization occurs when sufficiently energetic charged particles or radiant energy travels through gases, liquids or solids. The term “ion-exchange” is known in the art to typically refer to the use of ion-exchange resins which substitute positive or negative undesirable ions in water with preferred ions, the most common example being water softening by exchanging Ca^{2+} or Mg^{2+} for 2Na^{+} .
- Ceramic material is known to be capable of emitting far infrared rays (IR-C, $3\mu\text{m}$ -1mm) at high temperatures, hence the use of ceramic heaters. However, ceramic material which is no longer at high temperature does not emit said radiation.

It is therefore not credible that water that has been previously subjected to a magnetic field may behave as “magnetized water” and hence impart magnetic field effects onto other substances. Nor is it credible that passing water over two sets of ceramic material results in “ionized water with smaller water molecule clusters with higher vibrational energy at the molecular level and increased oxygen content”. Finally, it is not credible that the organoleptic properties of beverages are affected by magnetic fields either directly or indirectly, let alone by "magnetized liquid", whether or not they comprise tannins.

Therefore the invention does not comply with PCT Article 33(4).

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Box No. VIII Certain observations in the international application

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

PCT Articles 5 & 6

The description does not comply with PCT Article 5. The description does not disclose the invention in a manner sufficiently clear and complete to be carried out by a person skilled in the art, since, having regard to the known laws of nature, the invention is not capable of performing in the manner described.

The specification asserts that water that has previously been subjected to a magnetic field may impart the effects of a magnetic field on other substances, in particular onto beverages such that their organoleptic properties may be improved via modification of their tannins. Additional assertions include that ceramic material is capable of passively emitting negative ions and far infrared rays.

Well-established principals include that the effects of magnetic fields on water are limited to when the water is within said field, tannins are not affected by magnetic fields, and that ceramic materials are not capable of releasing ions and are only capable of emitting far infrared rays while subjected to high temperatures.

Claims 1-10 do not comply with PCT Article 6 because they are not fully supported by the description.

The scope of the claims must be enabled by the description across their entire scope. However the claimed invention cannot be worked through the whole of the field claimed by routine methods of experimentation or analysis as it defies well-established physical laws and principles. There are no convincing examples or evidence which demonstrate that: water previously subjected to a magnetic field may impart the effects of a magnetic field onto another substance; "magnetized liquid" improves organoleptic properties of alcoholic beverages; ceramic balls behave as "ion-exchange medium" and can release negative ions; ceramic balls passively emit far infrared rays. Please note that the applicant's submissions on description pages 1-2 & 6-9, including in particular page 8, lines 26-31 & Figs 1-3 have all been taken into account but are considered inconsistent with well-established physical laws and principles and also lacking in the rigour required of scientific evidence.

In addition to the issues discussed above, claims 1-10 further lack support as they are inconsistent with the description due to the omission of one or more features that the description indicates is intrinsic to the invention.

In particular, independent claims 1 and 7 define a method and system for improving organoleptic properties of a beverage substance, however the description only provides support for alcoholic beverages containing tannins (see description - title; page 1, line 6-page 2, line 13; page 3, lines 25-26; page 4, lines 18-19; page 5, lines 10-17; page 7, line 17-page 8, line 6; Figs 1-3).

Claims 1-3, 5, 7 & 9 further lack support as they define an apparatus and method for producing magnetized liquid, however the description only provides support for magnetizing water (see description - title; page 5, lines 10-17; page 6, line 12-page 7, line 31; page 8, lines 22-26; page 10, lines 1-24; Figs 1-3). Please see the related clarity objection below regarding the inconsistency of the use of the terms "water" and "liquid" throughout the claims.

Claims 4 & 8 further lack support in that they define: the use of "magnetized medium" whereas the description (page 9, lines 27-31) makes it clear that permanent magnets are required in order for a permanent magnetic field to be applied to the water being treated; and the use of "ion-exchange medium" whereas the description (page 9, lines 7-10) only discloses the use of ceramic balls.

Please note that the description does not specify nor direct the person skilled in the art to any alternatives to the features specified above.

Clarity

Claims 1-10 are unclear because the terms "improving" and "organoleptic properties" in independent claims 1 & 7 are subjective and variable in nature, hence the scope of an apparatus and method for improving organoleptic properties of beverage substances is indeterminate. The independent claims also define soaking the beverage substance "into" a container, which may be construed as intended by the description to mean a beverage within a container is placed within another container containing magnetized liquid (see Figs 2 & 3 in particular), or may also be reasonably construed to mean that the container is porous and soaks up the beverage. For the purpose of examination I have construed the independent claims as follows: 'a method for improving organoleptic properties of a beverage comprising: pouring magnetized liquid into a container; and placing the beverage within said container'; 'a system (apparatus) suitable for improving the organoleptic properties of a beverage comprising: a magnetized liquid and a beverage within a container'.

Regarding claims 1, 4-6 & 7-10, in light of the credibility objection I also consider than any "magnetized liquid" produced by the method of the current application (as defined by claim 4) would be suitable for and inherently result in producing the asserted results including: indirectly improving organoleptic properties of beverage substances by modification of tannin structures and

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content; comprising weakened intra-molecular bonding and enhanced inter-molecular bonding of the liquid molecules; having increased zeta potential of calcite and changed physical and chemical properties; having increased viscosity and water vaporization rate and reduced water tension.

Claims 4 & 8 further lack clarity as a result of the phrase "a plurality of filtration medium...comprising" because the following listed method steps or apparatus features do not include subsequent filtration (wherein filtration is generally defined as the removal of a component from a fluid by passing through a porous device). I have construed said filtration medium as treatment medium for the purpose of examination. The term "ion exchange medium" has a technical meaning in the art (generally a matrix or support material usually comprising an anionic or cationic resin allowing for an ion of interest to be loaded and later stripped) which contradicts the special meaning given by the description. In accordance with the PCT Guidelines, the claims have been interpreted using the special meaning as follows: any ceramic ball shaped material (ceramic balls which inherently are comprised of both negative and positive ions - page 9, lines 7-10). This discrepancy potentially generates ambiguity in the specification and consequently, the meaning in the art has also been considered for the purposes of searching and in formulating this opinion. Regarding the term "Far Infrared Rays (FIR) ceramic balls", it is noted that any ceramic material at high temperature is known to be capable of emitting far infrared rays hence this term also appears to encompass any ceramic material.

Please also note the inconsistency between terms referring to "magnetized medium" and "magnetized ball" in claims 4, 6, 8 & 10 as well as the description (page 9, lines 27-31). As these terms appear to refer to the same feature and "magnetized energy balls" has no meaning in the art, nor is it given a clear special meaning within the complete specification, it has hence been construed to mean a permanent magnet.

Claims 4, 6 & 10 lack clarity because the term "water" lacks antecedence. In particular, claim 4 lacks clarity because I cannot find an antecedent to "the ionized water" within the claim or when appended to claim 1. Similar objections apply as a result of the inconsistent use of the terms "water" and "liquid" to claims 6 & 10. For the purpose of examination I have construed liquid as water, this is consistent with a reading of the complete specification as noted above in the support objection.