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**PATENT COOPERATION TREATY**

From the  
INTERNATIONAL SEARCHING AUTHORITY

REC'D 01 NOV 2004

**PCT** WIPO **PCT**

To:  
KIM, KYUNG-MI  
  
1217-5 JANG-GI B/D 4F, BONRI-DONG, DALSEO-GU,  
KISAN INTERNATIONAL PATENT & LAW OFFICE,  
DAE-GU 704-120, Republic of Korea

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) **25 OCTOBER 2004 (25.10.2004)**

Applicant's or agent's file reference  
KSPCT-04-01

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
**PCT/KR2004/000182**

International filing date (day/month/year)  
**30 JANUARY 2004 (30.01.2004)**

Priority date(day/month/year)

International Patent Classification (IPC) or both national classification and IPC  
**IPC7 C08J 9/16**

Applicant  
**PARK, BONG-KUK**

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 43bis.1(a)(i) with regard to novelty, inventive step or 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 66.1bis(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR  
 Korean Intellectual Property Office  
920 Dunsan-dong, Seo-gu, Daejeon 302-701,  
Republic of Korea  
Facsimile No. 82-42-472-7140

Authorized officer  
SOHN, Chang Ho  
Telephone No. 82-42-481-5538  


WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/KR2004/000182

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, unless otherwise indicated under this item.

This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- a sequence listing  
 table(s) related to the sequence listing

b. format of material

- in written format  
 in computer readable form

c. time of filing/furnishing

- contained in the international application as filed.  
 filed together with the international application in computer readable form.  
 furnished subsequently to this Authority for the purposes of search.

3.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto 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.

4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2004/000182

**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	<u>1-10</u>	YES
	Claims	<u>none</u>	NO
Inventive step (IS)	Claims	<u>1-10</u>	YES
	Claims	<u>none</u>	NO
Industrial applicability (IA)	Claims	<u>1-10</u>	YES
	Claims	<u>none</u>	NO

2. Citations and explanations :

The following documents identified in the International Search Report have been considered for this report:

D1 : WO 91/14724 A (E.I.Du Pont De Nemours and Company) 2 June 1987

D2 : US 5786398 A (Owens-Corning Fiberglas Tech. Inc.) 28 July 1998

D3 : JP 55-29533 A (Hitachi Ltd.) 1 March 1980

Claims 1-10 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest any of the embodiments as specifically set forth in the claims.

The invention described in independent claims 1 and 6 relates to an expanded polystyrene bead having a functional skin layer and the manufacturing process thereof.

Comparing claims 1 and 6 with D1-D3, the subject matter of these claims differs from the teachings of D1-D3 in that the expanded polystyrene bead is coated with a functional skin layer comprising a poly(vinyl acetate) and functional additives (flame retardants, heat stabilizer, surfactant etc.). According to the present invention, the expanded polystyrene bead forming a core layer exhibits its typical characteristics such as adiabaticity and shock absorbability; poly(vinyl acetate) having a relatively low softening temperature forming a skin layer generates high hermeticity and water-proofness and facilitates the addition of functional additives so as to enhance functionality.

Therefore, the subject matter of independent claims 1 and 6 is considered to be novel and to involve an inventive step; consequently, the subject matter of dependent claims 2-5, 7-10 is also novel and inventive.

Claims 1-10 meet the criteria of PCT Article 33(4), IA, because the invention is industrially applicable.