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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/166,376	01/28/2014	Ping Wang	TTC-69904/08	8968
	7590 04/27/201 ASS, SPRINKLE,	EXAMINER		
	CITKOWSKI, P.C.	ARIANI, KADE		
TROY, MI 480			ART UNIT	PAPER NUMBER
			1651	
			NOTIFICATION DATE	DELIVERY MODE
			04/27/2015	ELECTRONIC

## Please find below and/or attached an Office communication concerning this application or proceeding.

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	<b>Application No.</b> 14/166,376	an administration of the second contraction.	WANG ET AL.	
Office Action Summary	Examiner KADE ARIANI	Art Unit 1651	AIA (First Inventor to File) Status No	
The MAILING DATE of this communication app Period for Reply	pears on the cover sheet with	h the corresponder	nce address	
A SHORTENED STATUTORY PERIOD FOR REPLY THIS COMMUNICATION.  - Extensions of time may be available under the provisions of 37 CFR 1.13 after SIX (6) MONTHS from the mailing date of this communication If NO period for reply is specified above, the maximum statutory period w - Failure to reply within the set or extended period for reply will, by statute, Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).	36(a). In no event, however, may a re vill apply and will expire SIX (6) MONT , cause the application to become ABA	ply be timely filed  HS from the mailing date  NDONED (35 U.S.C. § 1:	of this communication. 33).	
Status				
1) Responsive to communication(s) filed on <u>04/12</u>	<del></del>			
A declaration(s)/affidavit(s) under 37 CFR 1.1	- 1	<u>-</u>		
·	action is non-final.			
3) An election was made by the applicant in response	10.00		ing the interview on	
; the restriction requirement and election	•		to the merita is	
4) Since this application is in condition for allowar closed in accordance with the practice under E				
Disposition of Claims*		7		
5) Claim(s) 1-5 is/are pending in the application.  5a) Of the above claim(s) is/are withdraw  6) Claim(s) is/are allowed.  7) Claim(s) 1-5 is/are rejected.  8) Claim(s) is/are objected to.  9) Claim(s) are subject to restriction and/or are subject to restriction and/or and claims have been determined allowable, you may be eleparticipating intellectual property office for the corresponding are antip://www.uspto.gov/patents/init_events/pph/index.jsp or send  Application Papers  10) The specification is objected to by the Examine 11) The drawing(s) filed on is/are: a) access applicant may not request that any objection to the Replacement drawing sheet(s) including the correct	r election requirement. igible to benefit from the <b>Pate</b> pplication. For more information I an inquiry to <u>PPHfeedback@</u> Ir. epted or b) □ objected to b drawing(s) be held in abeyand	on, please see uspto.gov. y the Examiner. ee. See 37 CFR 1.8	5(a).	
Priority under 35 U.S.C. § 119  12) Acknowledgment is made of a claim for foreign  Certified copies:  a) All b) Some** c) None of the:  1. Certified copies of the priority document 2. Certified copies of the priority document 3. Copies of the certified copies of the priority document application from the International Bureau  ** See the attached detailed Office action for a list of the certified	ts have been received. ts have been received in Apority documents have been u (PCT Rule 17.2(a)).	oplication No		
Attachment(s)				
Notice of References Cited (PTO-892)	3) 🔲 Interview Su	ımmary (PTO-413)		
2) Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/S	Paper No(s)	/Mail Date		



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The present application is being examined under the pre-AIA first to invent provisions.

#### **DETAILED ACTION**

The amendments filed on April 14, 2015 have been received.

Claims 1-5 are pending in this application and were examined on their merits.

## Answer to Arguments

The objection to claim 2 is withdrawn due to the amendments filed on 04/14/2015.

The rejection of claims 1-5 under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite is withdrawn due to the amendments filed on 04/14/2015.

In response to applicant's argument, with respect to the rejection of claims 1-5 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Russell et al. in view of Studer et al., that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. type of solvent) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant further argues that a person of ordinary skill in the art would not be motivated to apply the teachings of Russell which requires water-borne systems, and would not be motivated to modify the teachings of Russell to provide the claimed composite material. These arguments are considered but are not found persuasive because Russell et al. teach that enzyme activity depend on the type of solvent, and further teach enzymes prefer hydrophobic environment (see for example column 8 lines 37-42). Therefore, the solvent in the method and composition taught by Russell would have been optimized. In addition at the time the invention was made it was known in the art that hydroxyl functionalized acrylate react with polyisocyanate cross-linker when dissolved in a suitable solvent and form two-component polymer material (see, for example, p. 83 "Summary" and p. 84 last paragraph of Keyes et al., available online on 2006). The rejection is maintained for the reasons mentioned immediately- above and in the absence of evidence to the contrary.



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In response to applicant's argument, with respect to the rejection of claims 1-5 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over at least claims 1-4, 7, 22 and 23 of US patent No 8,252,571 B2., that the claims fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. percent activity retention, etc.) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

## Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Russell et al. (US patent No. 6,905,733 B2) and Studer et al. (European Polymer Journal, 2005, Vol. 41, p. 157-167).

Russell et al. teach a protein-polymer composite material (DFPase/enzyme-containing coating or "ECC") comprising two-component solvent-borne polymer resin (two-component solvent-borne polyurethane), polyisocyanate cross-linker, and additives (see for example column 1 lines 65-Continued on column 2 lines 1-8, and column 3 lines "ECC Synthesis"), and the enzyme is homogenously distributed within the material (column 8 lines 8-15, and Figures 2A and 2B), and further teach the thickness of the coating is at 10 μm (particle size of 10 μm or less) (column 5 lines 64). Russell et al. teach a wide variety of enzymes can be used in the material (column 3 lines 1-4). Russell et al. teach that enzyme activity depends on the type of solvent and enzyme prefer hydrophobic environment (see for example column 8 lines 37-42).



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Moreover, Studer et al. teach using hydroxyl functionalized acrylate resin (and isocyanate crosslinker) to generate crosslinked polymer material (coating) (see for example p. 159  $1^{st}$  column  $2^{nd}$  paragraph). Therefore, a person of ordinary skill in the art at the time the invention was made knowing that would have been motivated to substitute the enzyme/protein for amylase and hydroxyl functionalized acrylate for in the material taught by Russell et al. would have been motivated to substitute hydroxyl functionalized acrylate and  $\alpha$ -amylase in the method and the material taught by Russell et al. with a reasonable expectation of success to provide the claimed composite material.

## **Double Patenting Rejection**

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer.

A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).



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