

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. :	11/615,539	Confirmation No.	1057
Applicant(s):	Stuart N. Milligan et al.	Examiner:	Boyle, Robert C.
Filed:	12/22/2006	TC/A.U.:	1796
Docket No.:	34249US		
For:	Drag Reduction of Asphaltenic Crude Oils		

**RESPONSE TO FINAL OFFICE ACTION**

Date: August 27, 2009

Mail Stop Amendment  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Final Office Action dated May 29, 2009 please reconsider the above-identified application based on the following claims and remarks:

**Remarks/Arguments** begin on page 2 of this paper.

### Remarks

Applicants initially wishes to thank examiner for the telephonic interview conducted August 5, 2009. Attached to this response is the required fee and transmittal for a Request for Continued Examination.

#### **Claims Rejections 35 USC § 103**

Claims 1-9, 11, 13-15, 17-36, 38-42, 51-75 and 83-96 are rejected under 35 USC § 103(a) as being unpatentable over Evani (US 5,159,035) in view of Schievelbein (US 6,007,702).

Applicants claims are not obvious over Evani in view of Schievelbein since applicants weight average molecular weight of at least  $1 \times 10^6$  g/mol in order to reduce the drag in the liquid hydrocarbons is outside the scope of the current references.

In direct response to the Advisory Action, attached is an article from Zakin, J.L., and Hunston, D.L., "Effect of Polymer Molecular Variables on Drag Reduction", J. Macromol. Sci.-Phys. B18(4), p. 795-814 (1980). In this article Jacques Zakin of the Ohio State University and Donald Hunston of the Naval Research Laboratory state that drag reduction is enhanced by high molecular weight and that in their experiments the minimum molecular weight necessary to observe drag reduction was  $M_{w, \min} 1 \times 10^6$ .

Evani only discloses a low weight average molecular weight from about 50,000 to about 400,000. Therefore it would be impossible for Evani to teach, suggest or motivate anybody skilled in the art to impart any drag reduction at these low molecular weights. Furthermore, enclosed is an affidavit from Ray Johnston, Principal Engineer, stating that Evani does not teach, suggest or motivate one skilled in the art to produce a drag reducing polymer with a weight average molecular weight of at least  $1 \times 10^6$  g/mol in order to reduce the drag in the liquid hydrocarbon.

The examiner additionally states in paragraph 11 of the Advisory Action that “A preferred embodiment is not controlling, rather, all disclosures “including unpreferred embodiments” must be considered. *In re Lamberti* 192 USPQ 278, 280 (CCPA 1976) citing *In re Mills* 176 USPQ 196 (CCPA 1972).”. In response to this Applicant asserts that it is never disclosed in Evani that it would be possible to produce a copolymer with a weight average molecular weight greater than 400,000 (column 7, lines 40-45). Furthermore as supported by the affidavit from Ray Johnston, if Evani were to teach a weight average molecular weight of at least  $1 \times 10^6$  g/mol it would substantially modify the essential beneficial aspects that Evani’s patent asserts.

Accordingly, if “the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious.” *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Therefore, applicants application cannot be found unpatentable over Evani since a “prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.” *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

Schievelbein does not teach the deficiencies of Evani. Most notably, Schievelbein does not teach applicants claimed element of 25,000 repeating units or an average weight average molecular weight of at least  $1 \times 10^6$  g/mol.

Due to the arguments submitted above, reconsideration of the rejection is respectfully requested.

Claims 4-8, 27-31, 56-59, 68-71 and 90-91 are rejected under 35 USC § 103(a) as being unpatentable over Evani (US 5,159,035) in view of Schievelbein (US 6,007,702) in further view of Heck et al (US 5,374,350). Heck et al does not teach the deficiencies of Evani in view of

Schievelbein. Most notably, Heck et al does not teach applicants claimed element of 25,000 repeating units or an average weight average molecular weight of at least  $1 \times 10^6$  g/mol.

Due to the arguments submitted above, reconsideration of the rejection is respectfully requested.

Claims 16 and 37 are rejected under 35 USC § 103(a) as being unpatentable over Evani (US 5,159,035) in view of Schievelbein (US 6,007,702) in further view of Heck et al (US 5,374,350). Heck et al does not teach the deficiencies of Evani in view of Schievelbein. Most notably, Heck et al does not teach applicants claimed element of 25,000 repeating units or an average weight average molecular weight of at least  $1 \times 10^6$  g/mol.

Due to the arguments submitted above, reconsideration of the rejection is respectfully requested.

If any extension of time is necessary in order for this submission to be considered timely filed, the Commissioner is authorized to please appropriately charge or credit those fees to **Deposit Account Number 16-1575 of ConocoPhillips Company** and consider this a petition for any necessary extension of time.

If resolution of any remaining issues pertaining to restriction groups and election may be facilitated by a telephone conference, or if the Examiner has any questions or comments or otherwise feels it would be advantageous, the Examiner is encouraged to telephone the undersigned at (281) 293-3454.

Respectfully submitted,

Dated: August 27, 2009

By: /Richard Yuen/  
Richard Yuen, Reg. No. L0278

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**AFFIDAVIT UNDER 37 CFR 1.132**

I Ray L. Johnston state as follows:

1. I am over 18 years of age and competent to make this Affidavit.
2. I am a citizen of the United States and a resident of Ponca City, Oklahoma.
3. I have been employed by ConocoPhillips Company since 1980 where my current position is Principal Engineer in the Specialty Products division.
4. My educational background includes a Bachelors of Science in Chemical Engineering and a Masters of Chemical Engineering from Oklahoma State University.
5. I currently have five pending patents and ten issued patents with the United States Patent and Trademark Office.
6. I have authored four peer reviewed publications and in the past year presented at three international conferences in the area of heavy oil and pipeline technologies.
7. I am a named inventor in the above identified pending patent application.
8. This currently pending patent application provides a method of introducing a drag reducing polymer into a liquid hydrocarbon wherein the drag reducing polymer has a weight average molecular weight of at least  $1 \times 10^6$  g/mol in order to reduce the drag in liquid hydrocarbon.

9. It is an essential feature of the current patent application that the weight average molecular weight is at least  $1 \times 10^6$  g/mol or drag reduction of liquid hydrocarbons will not occur.
10. An essential element of US Patent 5,159,035 involves their thermoplastic ionic polymers capable for extrusion, molding or otherwise fabricating by using methods conventionally employed in the fabrication of conventional thermoplastic polymers (Column 7, lines 16-21).
11. US Patent 5,159,035 asserts that the weight average molecular weights of their copolymers are limited to between 50,000 and 400,000. The polymers of my current pending patent application which has a weight average molecular weight of at least  $1 \times 10^6$  g/mol cannot be fabricated by the methods of US Patent 5,159,035.
12. The weight average molecular weight of US Patent 5,159,035 is insufficient to achieve drag reduction in hydrocarbons. Although it is statistically possible that there may be some copolymers in US Patent 5,159,035 that will achieve  $1 \times 10^6$  g/mol there is not enough to impart any measurable drag reduction in hydrocarbons.
13. I further declare that all statements made herein of my own knowledge are true; all statements made on information or belief are believed to be true; and these statements are made with the knowledge that willful, false statements and the like so made are punishable by fine, imprisonment, or both, under § 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Respectfully submitted,

By Ray L. Johnston Date: August 26, 2009  
Ray L. Johnston