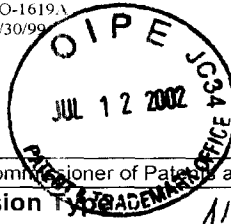


07-18-2002

U.S. Department of Commerce  
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Name (line 1) Ludovic

Execution Date  
Month Day Year  
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Name (line 2) RAYNAL

**Second Party**

Name (line 1) Isabelle

Execution Date  
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Name (line 2) HARTER

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Name (line 1) INSTITUT FRANCAIS DU PETROLE

Name (line 2)

Address (line 1) 1 & 4 avenue de Bois-Preau

Address (line 2)

Address (line 3) RUEIL MALMAISON  
CEDEX

FRANCE

92852

City

State/Country

Zip Code

**Domestic Representative Name and Address**

Enter for the first Receiving Party only

Name Millen, White, Zelano & Branigan, P.C.

Address (line 1) 2200 Clarendon Boulevard

Address (line 2) Suite 1400

Address (line 3) Arlington, VA 22201

Address (line 4)

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**PATENT**  
**REEL: 013084 FRAME: 0867**

**Correspondent Name and Address**

Area Code and Telephone Number

(703) 243-6333

Name Millen, White, Zelano & Branigan, P.C.

Address (line 1) 2200 Clarendon Boulevard

Address (line 2) Suite 1400

Address (line 3) Arlington, VA 22201

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**Patent Application Number(s)**

10/141,353

**Patent Number(s)**

If this document is being filed together with a new Patent Application, enter the date the patent application was signed by the first named executing inventor.

Month Day Year

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I. William Millen

Name of Person Signing



Signature

July 12, 2002

Date

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Month Day Year

Name (line 2)

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**Patent Application Number(s)**

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**ASSIGNMENT**

WHEREAS the below named inventor (if only one inventor is named below) or inventors (if plural inventors are named below) hereinafter referred to as the ASSIGNOR invented a certain improvement relating to

**REACTION CHAMBER THAT IS ELONGATED ALONG AN AXIS THAT CONTAINS AT LEAST ONE SOLID CATALYST BED AND AT LEAST ONE BOX FOR CONTACT, MIXING AND QUENCHING**

- ☐ for which an application for letters Patent to be filed in the United States Patent and Trademark Office was executed on even date.  
☒ for which U.S. Application Serial No. 10/141,353 for Letters Patent was filed in the U.S. Patent and Trademark Office on May 09, 2002.  
☐ for which an International Application was filed on \_\_\_\_\_ as PCT /\_\_\_\_\_/\_\_\_\_\_, designating the United States.

AND WHEREAS

INSTITUT FRANCAIS DU PETROLE  
 1 & 4 avenue de Bois-Préau,  
 92852 RUEIL MALMAISON CEDEX,  
 FRANCE

hereinafter referred to as the ASSIGNEE, is desirous of acquiring the entire right, title, and interest in and to said invention and application, including any and all divisions and continuations thereof, and any and all Letters Patent Which may be granted thereon, including any and all renewals, reissues, reexaminations and extensions thereof.

NOW, WITNESSETH that for good and valuable consideration, the receipt whereof is hereby acknowledged, ASSIGNOR hereby assigns, sells, and transfers to ASSIGNEE, its assigns and legal representatives, the entire and exclusive right, title and interest in and to said invention and application, including any and all divisions and continuations thereof, and any and all Letters Patent which may be granted therefor, including any and all renewals, reissues, reexaminations and extensions thereof, and in and to any and all priority and/or convention rights or benefits accruing or to accrue with respect to the filing or securing of patents in the United States and/or any countries foreign thereto, SAID ASSIGNEE, its assigns and legal representatives to have, hold, exercise, and enjoy said invention and application, including any and all divisions and continuations thereof, and any and all Letters Patent which may be granted therefor, including any and all renewals, reissues, reexaminations and extensions thereof, with all the rights, powers, privileges and advantages in anywise arising from or appertaining thereto, for and during the term of terms of any and all such Letters Patent when granted, including any and all renewals, reissues, reexaminations and extensions thereof, with all the rights, powers, privileges and advantages in anywise arising from or appertaining thereto, for and during the term or terms of any and all such Letters Patent when granted, including any and all renewals, reissues, reexaminations and extensions thereof, for the use and benefit of ASSIGNEE and its assigns and legal representatives, in as ample and beneficial a manner to all intents and purposes as the ASSIGNOR might or could have held and enjoyed the same, if the assignment had not been made.

AND ASSIGNOR hereby agrees to execute all papers that may be necessary to file applications in the United States and foreign countries for said invention and to assign the same to said ASSIGNEE, its assigns and legal representatives and to execute any other papers that may be needed in connection with filing said applications and securing Letters Patents thereon.

AND ASSIGNOR authorizes and requests the Commissioner of Patents and Trademarks to issue a Letters Patent on said application, and on any and all divisions and continuations thereof, to ASSIGNEE, its assigns and legal representatives, in accordance herewith.

The undersigned hereby grant(s) the law firm of Millen, White, Zelano & Branigan, P.C. the power to insert on this assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

IN TESTIMONY WHEREOF this assignment is executed by ASSIGNOR.

201 FULL NAME OF SOLE OR FIRST NAMED INVENTOR <b>RAYNAL Ludovic</b>	INVENTOR'S SIGNATURE <i>Ludovic Raynal</i>	DATE <i>12 June 2002</i>
202 FULL NAME OF SECOND JOINT INVENTOR, IF ANY <b>HARTER Isabelle</b>	INVENTOR'S SIGNATURE <i>Isabelle Harter</i>	DATE <i>13 June 2002</i>
203 FULL NAME OF THIRD JOINT INVENTOR, IF ANY <b>AUBRY Francis</b>	INVENTOR'S SIGNATURE <i>Francis Aubry</i>	DATE <i>12 June 2002</i>
204 FULL NAME OF FOURTH JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
205 FULL NAME OF FIFTH JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
206 FULL NAME OF SIXTH JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
207 FULL NAME OF SEVENTH JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
208 FULL NAME OF EIGHTH JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
209 FULL NAME OF EIGHTH JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
210 FULL NAME OF EIGHTH JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE

**PATENT**

**RECORDED: 07/12/2002**

**REEL: 013084 FRAME: 0870**