

## PATENT ASSIGNMENT COVER SHEET

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<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
ELIAS PIRAYESH	06/07/2012
<b>RECEIVING PARTY DATA</b>	
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<b>State/Country:</b>	TEXAS
<b>Postal Code:</b>	79409
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	14433464
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<b>SIGNATURE:</b>	/Laura DaConceicao/
<b>DATE SIGNED:</b>	04/28/2015
<b>Total Attachments: 1</b>	
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## Assignment of Rights

I (We), the inventor(s), subject to the intellectual property policy at Texas Tech University System and not under any obligation to assign intellectual property rights to another party, hereby affirm that in consideration for Texas Tech University System's evaluation of commercial potential and a share of income which I (we) may receive upon commercialization of my (our) invention, on the date of my (our) signature(s) as indicated below do hereby assign and transfer my (our) entire right, title, and interest in and to the invention disclosed in the invention disclosure form entitled "\_\_\_\_\_", unto Texas Tech University System, a Texas Institution of higher education having a place of business at: 1

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*Method for enhancing fracture  
propagation in subterranean formations*

and its successors, assigns and legal representatives, and in and to said patent applications and all divisional, continuing, substitute, renewal, reissue, and all other applications for Letters Patent which have been or shall be filed in the United States and all foreign countries on any of said improvements; and in and to all original and reissued patents which have been or shall be issued in the United States and all foreign countries on said improvements; and do everything possible which said Assignee, its successors, assigns or representatives shall consider desirable for aiding in securing and maintaining proper patent protection for said invention and for vesting title to said invention and all applications for patents and all patents on said improvements in said Assignee, its successors, assigns and legal representatives; and do everything possible which said Assignee, its successors, assigns or representatives shall consider desirable for aiding in the commercialization of the invention and improvements upon said invention; The assignment and transfer of rights in the invention shall include any know how, implementations, derivatives, and embodiments of the invention (software, hardware, source code, designs, processes, procedures, compositions, devices, drawings, data, trade secrets, methods, formulas, protocols, and techniques) and improvements upon said invention. This list is by way of illustration and not limitation.

Agree that said Assignee may apply for and receive Letters Patent for said improvements in its own name; and that, when requested, without charge to but at the expense of said Assignee, its successors, assignees and legal representatives, to carry out in good faith the intent and purpose of this assignment, the undersigned will execute all divisional, continuing, substitute, renewal, reissue, and all other patent applications on any and all said improvements; execute all rightful oaths, assignments, powers of attorney and other papers; communicate to said Assignee, its successors, assigns, and representatives, all facts known to the undersigned relating to said improvements and the history thereof; and

Covenant with said Assignee, its successors, assigns and legal representative that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

INVENTOR SIGNATURE	INVENTOR PRINTED NAME	DATE
<i>[Signature]</i>	M. T. Soliman	June 6, 2012
<i>[Signature]</i>	Mehdi Rafiee	June 7, 2012
<i>[Signature]</i>	Elias Pirayesh	June 7, 2012