

## ASSIGNMENT

This Patent Assignment (“Assignment”) is made and entered into by and between **James M. TOUR, Bing DENG, Wilbur Carter KITTRELL, Shichen XU and Yi CHENG** (the “Assignor(s)”) and **WILLIAM MARSH RICE UNIVERSITY**, a Texas non-profit corporation organized and existing under the laws of the State of Texas, United States of America, having a place of business at 6100 Main Street, Houston, TX 77005, US (the “Assignee”).

WHEREAS, Assignor(s) has agreed to assign and transfer to Assignee, and Assignee has agreed to acquire and accept from Assignor(s), Assignor(s)’s rights in the following patent application (the “Assigned Patents”):

**PCT Application No. PCT/US2023/076707 filed on October 12, 2023 and entitled “Electrothermal Chlorination and Carbochlorination Systems and Methods for Selective Metal Recovery.”**

NOW, THEREFORE, in consideration of the premises, mutual covenants and provisions herein contained, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the parties hereto agree to execute this Assignment, as follows:

**1.0 Assignment.** The Assignor(s) has assigned and/or by these presents does hereby assign, transfer and convey unto Assignee, the Assignor(s)’s whole and entire right, title and interest for the United States and all other countries throughout the world (i) in and to the inventions claimed or disclosed in the Assigned Patents, including all patents granting from the Assigned Patents or any continuation, continuation-in-part, division, renewal, substitute, reexamination or reissue thereof, including any patents in the United States and in all other countries throughout the world obtained based upon a claim of priority to any said Assigned Patents as provided for by United States law, the Patent Cooperation Treaty, the European Patent Convention, the Paris Convention, or other applicable law, as well as the right to claim priority to any said Assigned Patents as provided for by United States law, the Patent Cooperation Treaty, the European Patent Convention, the Paris Convention, or other applicable law, and (ii) in and to all rights to sue for and collect damages resulting from past, present and future infringement of said patents and patent applications in (i).

**2.0 Enjoyment.** The patents and patent applications subject to Paragraph 1 shall be held and enjoyed by Assignee, for Assignee’s use and benefit, and for Assignee’s legal representatives and assigns, to the full end of the term or terms for which same may be granted, as fully and entirely as the same would have been held by Assignor(s) had this assignment and transfer not been made.

**3.0 Authorize and Request.** Assignor(s) authorizes and requests the issuing authority to issue any and all United States and foreign patents granted on such patents and patent applications in 1.0(i) to the Assignee.

**4.0 Warrant and Covenant.** Assignor(s) warrants and covenants that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been

or will be made to others by the Assignor(s), and that the full right to convey the same as herein expressed is possessed by the Assignor(s).

**5.0 Assistance.** The parties to this Assignment shall use commercially reasonable efforts to take, or cause to be taken, all actions, and to do, or cause to be done, all things, necessary or advisable to consummate the transactions contemplated by this Assignment. Without limiting the foregoing, each of Assignor(s) and Assignee shall cooperate with the other without any further consideration to execute and deliver, or use commercially reasonable efforts to cause to be executed and delivered, all documents as may reasonably be necessary to secure the vesting in Assignee of all rights assigned to Assignee by this Assignment, including without limitation any documents required to record this Assignment with local patent offices, and all rightful oaths, declarations, and other papers.

**6.0 Binding.** The Assignment is binding on the heirs, assigns, representatives and successors of the Assignor(s) and extends to the successors, assigns and nominees of the Assignee.

**7.0 Effectiveness.** The assignment of said inventions is or was effective as of the earlier of (1) the date of execution of the Assignor(s) indicated below or (2) the filing date of the first filed of the patent applications of the Assigned Patents.

(Signature page follows)

IN WITNESS WHEREOF, **James M. TOUR** has executed this Patent Assignment, or has caused this Patent Assignment to be executed on his/her behalf by a representative duly authorized, all as of the date set forth below.

**James M. TOUR**

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

State of TX  
County of Harris

BEFORE ME, the undersigned authority, on this \_\_\_\_ day of \_\_\_\_\_, 2024 personally appeared **James M. TOUR**, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]

IN WITNESS WHEREOF, **Bing DENG** has executed this Patent Assignment, or has caused this Patent Assignment to be executed on his/her behalf by a representative duly authorized, all as of the date set forth below.

**Bing DENG**

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

State of \_\_\_\_\_  
County of \_\_\_\_\_

BEFORE ME, the undersigned authority, on this \_\_\_\_ day of \_\_\_\_\_, 2024 personally appeared **Bing DENG**, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]

IN WITNESS WHEREOF, **James M. TOUR** has executed this Patent Assignment, or has caused this Patent Assignment to be executed on his/her behalf by a representative duly authorized, all as of the date set forth below.

**James M. TOUR**

Signature: \_\_\_\_\_  
Date: \_\_\_\_\_

State of \_\_\_\_\_  
County of \_\_\_\_\_

BEFORE ME, the undersigned authority, on this \_\_\_\_ day of \_\_\_\_\_, 2024 personally appeared **James M. TOUR**, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]

IN WITNESS WHEREOF, **Bing DENG** has executed this Patent Assignment, or has caused this Patent Assignment to be executed on his/her behalf by a representative duly authorized, all as of the date set forth below.

**Bing DENG**

Signature: Bing Deng  
Date: 07/11/2024

State of TX  
County of Harris

BEFORE ME, the undersigned authority, on this \_\_\_\_ day of \_\_\_\_\_, 2024 personally appeared **Bing DENG**, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]

IN WITNESS WHEREOF, **Wilbur Carter KITTRELL** has executed this Patent Assignment, or has caused this Patent Assignment to be executed on his/her behalf by a representative duly authorized, all as of the date set forth below.

**Wilbur Carter KITTRELL**

Signature: Wilbur Carter Kittrell  
Date: July 11, 2024

State of Texas  
County of Harris

BEFORE ME, the undersigned authority, on this \_\_\_\_ day of \_\_\_\_\_, 2024 personally appeared **Wilbur Carter KITTRELL**, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]

IN WITNESS WHEREOF, **Shichen XU** has executed this Patent Assignment, or has caused this Patent Assignment to be executed on his/her behalf by a representative duly authorized, all as of the date set forth below.

**Shichen XU**

Signature: \_\_\_\_\_  
Date: \_\_\_\_\_

State of \_\_\_\_\_  
County of \_\_\_\_\_

BEFORE ME, the undersigned authority, on this \_\_\_\_ day of \_\_\_\_\_, 2024 personally appeared **Shichen XU**, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]

subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]

IN WITNESS WHEREOF, **Shichen XU** has executed this Patent Assignment, or has caused this Patent Assignment to be executed on his/her behalf by a representative duly authorized, all as of the date set forth below.

**Shichen XU**

Signature: Shichen Xu

Date: 07/10/2024

State of Texas

County of Harris

BEFORE ME, the undersigned authority, on this \_\_\_\_ day of \_\_\_\_\_, 2024, personally appeared **Shichen XU**, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]

IN WITNESS WHEREOF, Yi CHENG has executed this Patent Assignment, or has caused this Patent Assignment to be executed on his/her behalf by a representative duly authorized, all as of the date set forth below.

Yi CHENG

Signature: Yi Cheng

Date: 10/07/2024

State of \_\_\_\_\_

County of \_\_\_\_\_

BEFORE ME, the undersigned authority, on this \_\_\_\_\_ day of \_\_\_\_\_, 2024 personally appeared Yi CHENG, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]

IN WITNESS WHEREOF, Assignee has executed this Patent Assignment, or has caused this Patent Assignment to be executed on its behalf by a representative duly authorized.

**William Marsh Rice University**

By: Neha Malik

Name: Neha Malik

Title: Assistant Director, Intellectual Property

Date: 8/5/2024

*State of Texas*  
*County of Harris*

BEFORE ME, the undersigned authority, on this \_\_\_\_ day of \_\_\_\_\_, 2024 personally appeared **Neha Malik**, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same of his/her own free will for the purposes and consideration therein expressed.

\_\_\_\_\_  
Notary or Consular Officer

[seal]