

Introduction of Organic Soil Activator

Jiunn-Jyi Lay

1. *Name of Product: Organic soil activator (OSA)*

2. *Background of OSA*

Organic soil activator (OSA) is developed by the team of Dr. Lay who is the professor in the Department of Safety Health and Environmental Engineering of the National Kaohsiung First University of Science and Technology. OSA is a liquid harvested from a bio-co-cultural system using a natural organic material. This OSA consists of carbohydrates, proteins, amino acids, and volatile fatty acids. Moreover, rich of trace elements are also included in this OSA. It can improve the soil activity according to microorganisms' diversity and necessary nutrients, as well as buffer the pH level of soil. Subsequently, these improvements indirectly stimulate plant growth.

Many field studies and applications had been fulfilled in Taiwan such as Chinese tea, vegetables, Java apple, guava, and street trees. Especially, the OSA can improve the aquaculture sediment and water environments. Additionally, the OSA can stabilize its water quality and algae morphology. On the other hand, the OSA is a good candidate as the inocula for the generation of a specific organic fertilizer. The OSA is harvested from a continuous feed co-cultural system under anoxic and anaerobic conditions. Its by-product of biogas (hydrogen) can as biomass energy and as the indicator for monitoring the quality of the OSA. The diversity and stability is the characteristics of the OSA differing with the other commercial products with similar function in the market.

3. *Applications*

Agriculture: improving soil nutrient level, enhancing plant growth, strengthening soil environment

Forestry: protecting plant influencing sick

Aquaculture: improving sediment pollution, enhancing sediment bioactivity, improving water quality

Industry: improving the activity of activated sludge

4. *Methods*

Gardening and Planting

- Arbor: concentrated liquid 10-40 liter/plant-two weeks, dilution 50-100X

- Bush: concentrated liquid 5-20 liter/100 plant-two weeks, dilution 50-100X

- Vegetables and fruits: basically concentrated 1-5 liter/100 m²-two weeks, dilution 50-100X

Street Tree Maintaining and Protecting on Morbidity Risk

- Arbor: concentrated liquid 1-5 liter/plant-two weeks, dilution 20-50X
- Bush: concentrated liquid 0.5-1 liter/100 plant-two weeks, dilution 20-50X
- Big Area: basically concentrated 2-5 liter/100 m²-two weeks, dilution 20-100X irrigating around the soil near the root

5. Main Effect

1. Metabolizing the nutrient in the soil for the plant use
2. Stimulating plant growth
3. Protecting plant on morbidity risk
4. Improving soil environment for the microorganisms (probiotic) growth
5. As an inocula for generating a organic fertilizer
6. Buffering the pH level of soil
7. Purifying the pollution of aquaculture sediment

6. Patent Application in Process

- Taiwan Patent: MEDIUM FOR ANAEROBIC MICROORGANISM AND METHOD FOR MANUFACTURE THE SAME

 **中華民國專利資訊檢索系統**
經濟部智慧財產局

E-mail:

[首頁](#) | [分類瀏覽](#) | [專利檢索](#) | [檢](#)

■ 詳細資料內容 第 30/42 筆

[| 回前頁](#)

[查閱資料](#) [詳細說明](#) [專利範圍](#) [檢索歷程](#) [狀態/權利異動](#) [全部資料](#)        [案件狀態](#)

公開號	200902711
專利名稱	厭氧微生物益生菌培養基及其製備方法 MEDIUM FOR ANAEROBIC MICROORGANISM AND METHOD FOR MANUFACTURE THE SAME
公開日	2009/01/18
申請日	2007/07/05
申請號	096124553
國際分類號 /IPC	C12N-001/10(2006.01)
公報卷期	07-02
發明人	周家弘 CHOU, CHIA HUNG 賴傑吉 LAY, JIUNN JYI 黃介辰 HUANG, CHIEN CHEN 韓長龍 HAN, CHANG LUNG 張瑞仁 CHANG, JUI JEN

- US Patent: Microbial Hydrogen-Producing Process and System Thereof
 No.: 12/068,050



萬國法律事務所
 Formosa Transnational
 Attorneys at Law

台北市 106 信義區 3 段 106 號 11 樓
 電話 : 886-2-2755-1300
 傳真 : 886-2-2755-4400 (17F)
 886-3-2388-6000 (7F)
 Email : info@formosattlaw.com
 Website : www.formosattlaw.com

蕭介辰 先生
 國立中興大學 生科系
 台中市南區國光路 150 號

民國九十七年三月十二日

Re: 辦理美國發明專利申請案
 名稱: Microbial Hydrogen-Producing Process and System Thereof
 本所案號: 07P0566

蕭先生火鑒:

關於上開專利申請案, 本所已向美國專利商標局提出申請, 申請日期為
 2008 年 02 月 01 日, 申請案號為 12/068,050, 請查照。隨函檢附官方案號通知
 副本乙份, 請查核。

若有任何問題, 請隨時與本所聯絡。

蕭 介 辰 謹 啟

專利部經理

 蔡 宜 庭

專利部副理

 侯 春 榮

ATTORNEY/DOCKET NO.:	
DECLARATION FOR PATENT APPLICATION AND APPOINTMENT OF ATTORNEY	
As a below named inventor, I hereby declare that I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention (Design, if applicable) entitled:	
Title:	MICROBIAL HYDROGEN-PRODUCING PROCESS AND SYSTEM THEREOF
the specification of which (check at least one of the first three boxes below, as applicable):	
<input checked="" type="checkbox"/>	is attached hereto.
<input type="checkbox"/>	was filed on (day-month-year) _____ as U.S. Application Number _____
<input type="checkbox"/>	was filed on (day-month-year) _____ as PCT Application Number _____
<input type="checkbox"/>	and (if applicable) was amended on (day-month-year) _____
I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.	
I hereby claim foreign priority benefits under Title 35, United States Code §119 of any foreign application(s) for patent or inventor's certificate listed on the Application Data Sheet, and have also identified on the Application Data Sheet any foreign application for patent or inventor's certificate having a filing date before that of each application on which priority is claimed.	
I hereby claim the benefit under Title 35 U.S. Code §119(e) of any U.S. provisional applications listed on the Application Data Sheet.	
I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America listed on the Application Data Sheet, and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application.	
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.	
POWER OF ATTORNEY: I (We) hereby appoint as my (our) attorneys, with full powers of substitution and revocation, to prosecute this application including the submission and amendment of an application data sheet (37 CFR §1.76), to take instructions from my (our) agent, to receive all communications at the address stated on the Application Data Sheet, and transact all business in the Patent and Trademark Office connected therewith: J. Ernest Kenney, Reg. No. 19,179; Eugene Mar, Reg. No. 25,893; Richard E. Fichter, Reg. No. 26,382; Thomas J. Moore, Reg. No. 28,974; Joseph DeBenedictis, Reg. No. 28,502; and Benjamin E. Urcia, Reg. No. 33,805; each of Bacon & Thomas, PLLC, and	

**SUPPLEMENTAL PAGE FOR AN
 DECLARATION FOR PATENT APPLICATION AND APPOINTMENT OF ATTORNEY**

Full Name of Joint Inventor CHANG, JUI-JEN	Post Office Address No.250, Guoguang Rd., South District, Taichung City 402, Taiwan, R.O.C.
Citizenship Taiwan, R.O.C.	Residence (city, and either state or foreign country, MPEP §605.02)
Date 17.01.2008	Signature <i>Chang, Jui Jen</i>

Full Name of Joint Inventor HO, CHENG-YU	Post Office Address No.250, Guoguang Rd., South District, Taichung City 402, Taiwan, R.O.C.
Citizenship Taiwan, R.O.C.	Residence (city, and either state or foreign country, MPEP §605.02)
Date 17.01.2008	Signature <i>Ho, Cheng-Yu</i>

Full Name of Joint Inventor CHEN, WEI-EN	Post Office Address No.250, Guoguang Rd., South District, Taichung City 402, Taiwan, R.O.C.
Citizenship Taiwan, R.O.C.	Residence (city, and either state or foreign country, MPEP §605.02)
Date 17.01.2008	Signature <i>Chen, Wei-En</i>

Full Name of Joint Inventor LAY, JUANN-JYI	Post Office Address No.2, Zhuoyue Rd., Nanzhi District, Kaohsiung City 811, Taiwan, R.O.C.
Citizenship Taiwan, R.O.C.	Residence (city, and either state or foreign country, MPEP §605.02)
Date 17.01.2008	Signature <i>Lay, Juann-Jyi</i>

Full Name of First or Sole Inventor HUANG, CHIEH-CHEN	Post Office Address 9F., No.16, Yongnan St., South District, Taichung City 402, Taiwan, R.O.C.
Citizenship Taiwan, R.O.C.	Residence (city, and either state or foreign country, MPEP §605.02)
Date 17/01/2008	Signature <i>Chieh-Chen Huang</i>

See following page(s) for additional joint inventors. (09Nov2001)

See following page(s) for additional joint inventors. (02Nov2001)

7. *Testing Reports:*

- Composition: proteolytic enzyme, lipase, amylase, cellulose, fatty acids, alcohols, amino acids, carbohydrates, *Bacillus* sp. (10^8 cfu/mL), *Clostridium* sp. (10^8 cfu/mL)

- Heavy Metal: Non-detectable

8. *Security*

No significant impact on the environment is obtained for the microorganisms which are belong to general regards as safety according to Chinese EPA report No.0064747.