

**FORM 2**

**THE PATENTS ACT, 1970**

**(39 of 1970)**

**&**

**The Patent Rules, 2003**

**COMPLETE SPECIFICATION**

**(See section 10 and rule 13)**

**TITLE OF THE INVENTION**

**"Anti-obesity formulation from medicinal plants and preparation method thereof"**

**We, applicant(s)**

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The following specification particularly describes the nature of the invention and the manner in which it is performed:

## FIELD OF THE INVENTION

Present Invention related to Anti-obesity compounds derived from medicinal plants and the makeup of these components.

## BACKGROUND OF THE INVENTION:

- 5 An embodiment of the present invention is a composition for inhibiting obesity that includes a mixed herbal medicine, and more specifically, a mixed extract of ephedra, golden, and Huang SE, or a mixed extract that is further mixed with one or more selected from Seokchangpo, algae, lower lobe, or raw paper. It is concerned with a composition capable of inhibiting and preventing obesity and a variety of adult disorders.
- 10 Obesity is becoming a public health problem as the nation's economy grows and individuals consume more processed meals with high-calorie content while engaging in less physical activity. Obesity has a negative image and an unpleasant appearance to the viewer, but it is also uncomfortable in activities, as obese people are more uncomfortable in activities than normal people. It is associated with diseases such as diabetes, arteriosclerosis, hypertension, heart
- 15 disease, liver disease, gallstones, gout, kidney disease, and others. According to reports, surgery has a significant risk of infection, usually temporary. As a result, obesity is a severe health concern for people over middle age, and for young ladies, it is a serious consideration for aesthetic reasons.

  
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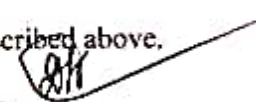
Recently, there has been increased interest in the use of numerous materials whose safety and usefulness have been shown for a long period and adequate exercise as a means of preventing and treating adult disorders such as obesity, among other things. Currently, foods containing dietary fiber, herbal medicines, and various food ingredients are being developed as health foods for obese people, but their effects are insignificant, and their normal lives are made more difficult by the side effects of a lack of various nutrients, which are common in the obese population. If you stop taking it, you will soon regain your previous weight.

Therefore, the present inventors have studied how to solve the problems described above using a mixed extract of ephedra, golden, and huangse, or a mixed extract that is further mixed with one or more selected from Seokchangpo, passer, lower lobe, and the base paper and one or more selected from Seokchangpo and passer. Thus, the present invention has been accomplished via the development of a herbal composition capable of inhibiting and preventing a wide range of adult ailments.

The current invention seeks to achieve this goal by developing a herbal composition that may effectively prevent and inhibit obesity and associated disorders.

Another objective of the current invention is to produce an anti-obesity agent that contains the composition as a component.

A further objective of the present invention is the provision of health food, including the composition described above.

  
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## SUMMARY OF PRESENT INVENTION:

The composition for inhibiting obesity that includes either a mixed extract of ephedra, golden, and huangse or another mixed extract that has been combined with one or more of the following: Seokchangpo, algae, lower lobe, and base paper are some of the characteristics of the present Invention: Anti-obesity medications and health foods containing the composition are also included in the classification.

For example, the composition for inhibiting obesity that includes either a mixed extract of ephedra, golden, and Huang's or another mixed extract that has been combined with one or more of the following: Seokchangpo, algae, lower lobe and base paper are some of the characteristics of the present Invention:

Anti-obesity medications and health foods containing the composition are also included in the classification.

Other embodiments of the present disclosure will also become readily apparent to those skilled in the art from the following detailed description of the embodiments concerning the accompanying figures, the intention not being limited to any particular embodiment or any particular set of embodiments disclosed in any particular case.

While the present Invention is described herein by example using embodiments and illustrative drawings, those skilled in the art will recognize that the Invention is not limited to the images of drawing or drawings described and are not intended to represent the various scale

components. Further, some features that may form a part of the Invention may not be illustrated in specific figures for ease of illustration. Such omissions do not limit the embodiments outlined in any way. It should be understood that the drawings and detailed descriptions are not intended to limit the Invention to the particular form disclosed. Still, on the contrary, the story is to cover all modifications, equivalents, and alternatives falling within the scope of the present Invention as defined by the appended claims. As used throughout

In this description, the word "may" is used in a permissive sense (i.e., meaning having the potential to) rather than the mandatory reason (i.e., meaning must).

Further, the words "a" or "an" mean "at least one," and the word "plurality" means "one or more" unless otherwise mentioned. Furthermore, the terminology and phraseology used herein are solely for descriptive purposes and should not be construed as limiting. Language such as "including," "comprising," "having," "containing," or "involving," and variations thereof, is intended to be broad and encompass the subject matter listed after that, equivalents, and additional subject matter not recited, and is not intended to exclude other additives, components, integers or steps. Likewise, the term "comprising" is considered synonymous with the words "including" or "containing" for applicable legal purposes. Any discussion of documents, materials, devices, articles, and the like are included in the specification solely to provide a context for the present Invention. It is not suggested or represented that any or all of these matters form part of the prior art base or were common general knowledge in the field relevant to the present Invention.



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In this disclosure, whenever a composition or an element or a group of elements is preceded with the transitional phrase "comprising," it is understood that we also contemplate the same design, component or group of elements with transitional words "consisting of," "consisting," "selected from the group of consisting of," "including," or "is" preceding the recitation of the  
5 composition, element or group of elements and vice versa.

The present Invention is described from various embodiments concerning the accompanying drawings, wherein reference numerals used in the accompanying drawing correspond to the like elements throughout the description. However, this invention may be embodied in many different forms and should not be construed as limited to the embodiment. Instead, the image  
10 is provided so that this disclosure will be thorough and complete and fully convey the Invention's scope to those skilled in the art. The following detailed description provides numeric values and ranges for various implementations described. These values and ranges are treated as examples only and are not intended to limit the claims' scope. Also, several materials are identified as suitable for various facets of the implementations. These materials are to be  
15 treated as exemplary and are not intended to limit the Invention's scope.

A more particular description will be rendered by referencing specific embodiments illustrated in the appended drawings to clarify various aspects of some example embodiments of the present invention. It is appreciated that these drawings depict only illustrated embodiments of

  
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the story and are therefore not considered limiting its scope. The Invention will be described and explained with additional specificity and detail through the accompanying drawings.

So that the advantages of the present Invention will be readily understood. A detailed description of the story is discussed below in conjunction with the appended drawings, which  
5 should not be considered to limit the scope of the Invention to the accompanying drawings.

Further, another user interface can also be used with the relevant modification to provide the results above with the same modules, its principal, and protocols for the present Invention.

It is to be understood that the above description is intended to be illustrative and not restrictive.

For example, the above-discussed embodiments may be used in combination. Many other  
10 embodiments will be apparent to those of skill in the art upon reviewing the above description.

The benefits and advantages which the present Invention may provide have been described above about specific embodiments. These benefits and advantages and any elements or limitations that may cause them to occur or become more pronounced are not construed as critical, required, or essential features of any or all embodiments.

15 While the present Invention has been described concerning particular embodiments, it should be understood that the images are illustrative and that the Invention's scope is not limited to these embodiments. Many modifications, additions, and improvements to the embodiments above are possible. It is contemplated that these variations, changes, additions, and improvements fall within the Invention's scope.

  
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## DETAILED DESCRIPTION OF THE INVENTION:

This Invention pertains to a herbal extract that may suppress and prevent obesity and many adult illnesses. The herbal extract can be a combined extract of ephedra, golden, and huangse, or of one or more chosen from the Seokchangpo, passersby, lower lobe, and raw paper plants,

5 will be the case

This is accomplished by using a composition that contains 30 to 60 parts, in a dry weight ratio of 30 to 60 parts by weight of ephedra, gold, and sulfur.

A composition including at least one component chosen from 30 to 60 parts by weight, almonds 30 to 60 parts by weight, almonds 15 to 45 parts by weight, and 15 to 45 parts by weight of  
10 base paper in the composition also achieves the goal of the present Invention, among other things. Do.

As a primary therapy, the herbal medicines included in the components that make up the composition of the present Invention are primarily used to remove heat and moisture from the environment. Because the majority of fat patients suffer from various ailments caused by fever  
15 and dampness in eastern medicine, removing moist fever is the most effective way to address the issue of obesity patients.

Each component of the composition of the present Invention will be discussed in further depth in the following sections.

  
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Ephedra causes the body to sweat and expels excess heat, which helps to alleviate symptoms such as chills and fever. When taken in conjunction with honey, the lungs become powerful enough to stop coughing and mucus from forming. Ephedrine has a pharmacological activity comparable to that of adrenaline, although it functions more steadily and for a longer period.

5 Affects skeletal muscle by exerting an anti-fatigue effect. Aside from that, the components included in the product have an inhibiting impact on influenza virus. Ephedra is contained in the present Invention composition in amounts ranging from 30 to 60 parts per thousand by weight. There is now an issue with using less than 30 parts by weight of ephedra because the obesity inhibitory impact is inadequate. When using more than 60 parts by weight, there is a  
10 problem with the lack of an activity enhancing effect because of the rise in capacity.

Golden is the root of the Lamiaceae plant, which means "golden root." In addition to having an anti-inflammatory and anti-allergic action, it has an anti-microbial and antipyretic impact, a diuretic effect, a blood pressure-lowering effect, and other properties. The symptoms induced by the metal are eliminated by covering the body with gold. Chills and heat in the bones to  
15 cure, fever quenching thirst, jaundice, dysentery, diarrhea, stomach fever ( ) are excellent treatments for stomach fever (a). Clean the wall and give it a good spin. Heat-induced tonsillitis and purulent disorders such as melon, canopy, and edoema are among the conditions that may be treated. The quantity of gold employed in the current Invention's composition ranges from 30 to 60 parts per thousand by weight. At the present moment, when using less than 30 parts  
20 by weight of gold, there is an issue of inadequate obesity inhibitory impact; when using more

than 60 parts by weight of gold, there is a problem of no activity increase effect in proportion to the capacity increase.

The phoenix is the pollen of prosperity and the pollen of perennial plant wealth and the birth of children. When bleeding is associated with fever, the hemostatic action and clear blood are useful. Sprinkle turmeric powder on sudden nasal bleeding produced by inflammation in the nose to stop it in its tracks. It is beneficial for treating blood vomiting, phlegm-induced bleeding, boil-induced bleeding, intestinal bleeding, and hemorrhoids-induced bleeding. It has a diuretic effect and is beneficial in treating urinary acute bleeding and hematuria caused by renal TB because it is effective in stool. Uterine contractions caused by postpartum hemostasis impact both uterine contractions and hemostasis at the same time. Sulfur is contained in the composition of the present invention in amounts ranging from 30 to 60 parts per thousand by weight. At this time, if the use of sulfur is less than 30 parts by weight, there is a problem with the obesity inhibitory effect being insufficient; if the use of sulphur is greater than 60 parts by weight, it is not recommended because there is no activity increase effect from the increase in capacity, which is undesirable.

Seokchangpo is the rhizome of the Chunnamseong plant, also known as Seokchangpo. When used properly, it may help evacuate phlegm while also promoting the passage of Gi and blood. It is also excellent at reducing dampness. Efficacy in reducing the stagnation of water in the body, acting on the brain is effective in forgetting causing mental instability, and the low cost

  
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generated by the humidity is also useful in treating the symptoms of the condition. Stone spears are optionally included in the composition of the present invention and are present in amounts ranging from 30 to 60 parts by weight.

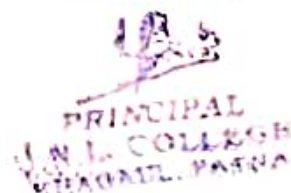
A passerby is an apricot seed that has reached maturity on the Rosaceae family tree. It is mostly used in eastern medicine to assist the lungs in stopping coughing and passing faeces. The hydrolysis products of amigdaline found in passersby inhibit the respiratory center, allowing the respiratory motions to be stabilized and coughing to be stopped. The addition of almond to the composition of the present invention is optional, and the quantity added ranges from 30 to 60 parts by weight.

The bottom lobe of the lotus flower, which is both a water lily and a plant, is represented by the leaf. The lower lobe raises the body, allowing toxic blood to escape. As a result, it was used to treat vomiting blood or sputum bleeding, postpartum swelling in the body, and discomfort associated with bruising. It has also been shown to be effective in the treatment of edoema by releasing moisture. The lower lobe is optionally included in the composition of the present invention and may be included in an amount ranging from 15 to 45 parts by weight.

The ground is made up of the dried root of the ground that belongs to a branch. It has the effect of soothing the mind, clearing the brain, and freeing those who are sad from their grip on reality.

In eastern medicine, god is referred to as spirit, and it is well recognized that the origin is engaged in the activity of deity. Expectoration, agitation in the uterus, and the process of

  
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releasing the Gi () are all well-known sensations in Chinese medicine. The base paper may be included in the composition of the present invention in an amount ranging from 15 to 45 parts by weight, depending on the application.

A preferred method of preparation is to mix the composition with the dried raw materials in each of the weight ratios listed above, and then extract the mixture by adding 5 to 15 times the amount of purified water or an aqueous alcohol solution relative to the total raw materials, or after mixing each herbal extract to be mixed into the weight part. After being concentrated under reduced pressure by filtration and rapidly frozen at -40 degrees Celsius or lower, the powder was lyophilized under pressures of 0.2 Torr or lowered to produce a powder, or the filtrate was concentrated under reduced pressure and layered with saturated lower alcohol to produce a powder. Under decreased pressure, the bottom alcohol layer is concentrated to entirely remove any leftover solvent, and then lyophilized in the same way to produce a powder.

While being delivered orally or parenterally during clinical administration, the composition of the present invention may be provided in the form of a generic pharmaceutical formulation when manufactured as a medicament according to the present invention.

During actual clinical administration, the composition of the present invention can be administered in a variety of oral or parenteral formulations using diluents or excipients such as fillers, extenders, binders, wetting agents, disintegrating agents, surfactants, and other

  
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ingredients that are commonly used in pharmaceutical formulations, such as glycerin, sodium chloride, and sodium bicarbonate. Are prepared with the help of.

Lignanans and lactone compounds and derivatives thereof are prepared in solid form for oral administration. They are available in various forms such as tablets, pills, powders, granules, and capsules. Lignanans and lactone compounds and derivatives are prepared in solid form with at least one excipient, such as starch, calcium carbonate, sucrose, or lactose. Gelatin is added to the mix. Along with basic excipients, lubricants such as magnesium stearate and talc are used to keep the medication from sticking together. Dissolutions, solvents, emulsions, and syrups are examples of oral preparations that are administered through a liquid route. It is possible to use excipients other than the typically used basic diluents of water and liquid paraffin, which include things like wetting agents, sweeteners, perfumes, binders, and preservatives. Have.

Formulations for parenteral administration include sterile aqueous solutions, water-insoluble solvents, suspensions, emulsions, lyophilizers, and suppositories, among other forms of delivery. Propylene glycol, polyethylene glycol, vegetable oils such as olive oil, injectable esters such as ethyl oleate, and other non-aqueous and suspending solvents may be employed as non-aqueous suspending solvents. Utopsol, macrogol, tween 61, cacao butter, laurin butter, glycerol gelatin, and other similar ingredients may be employed as the foundation of the suppository.

  
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According to the present Invention, the amount of active ingredient used in the manufacture of the active ingredient may be suitably chosen based on the absorbency, inactivation rate, excretion rate, age, sex, and overall health of the user in the body, among other factors. This Invention's composition contains 10-200 mg/kg of body weight, with a preferred concentration of 20-100 mg/kg, and it may be delivered three times a day, depending on the formulation used.

Additionally, as an active element in the present Invention is a health food that is used in the treatment of overweight people.

When swallowed to bring about a particular impact on health, food is a raw material rather than general medicine. Health food is created by adding the composition to the general food or by putting it in capsules, powdered, or suspension form. Consequently, there are no negative effects that may emerge as a result of long-term use of the medication.

  
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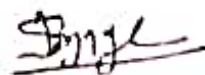
  
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**We Claim:**

1. The composition for suppressing obesity, which contains 30 to 60 parts by weight of ephedra, gold, and sulphur in the dry weight ratio, is defined by the fact that it contains 30 to 60 parts by weight of ephedra, gold, and sulphur in the dry weight ratio.
- 5 Claim 1 further specifies that the composition for reducing obesity contains at least one of the following: algae 30 to 60 parts by weight, almonds 15 to 45 parts by weight, and paper 15 to 45 parts by weight.
3. A treatment for obesity that contains as an active component either the composition of claim 1 or the composition of claim 2
- 10 4. A health food that contains the ingredients listed in either claim 1 or claim 2.
5. The anti-obesity agent described in claim 7, in which one or more of the following are added and mixed: 30 to 60 parts by weight of the stone cloth, 30 to 60 parts by weight of almonds, 15 to 45 parts by weight of paper, and 15 to 45 parts by weight of almonds A method for creating a composition for is described here.
- 15 Dated this 28<sup>th</sup> day of March 2022


  
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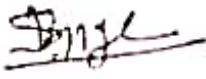


## ABSTRACT

### Anti-obesity formulation from medicinal plants and preparation method thereof

A composition for inhibiting obesity using a combination of medical goods is disclosed, which composition decreases body weight and adipose tissue and neutral fat, consequently  
5 suppressing and avoiding a variety of adult illnesses. An embodiment of the present Invention is a composition for inhibiting obesity that includes a mixed herbal medicine, and more specifically, a mixed extract of ephedra, golden, and huangse, or a mixed extract that is further mixed with one or more selected from Seokchangpo, algae, lower lobe, or raw paper. It is  
concerned with a composition capable of inhibiting and preventing obesity and a variety of  
10 adult disorders.

Dated this 28<sup>th</sup> day of March 2022

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**FORM 2**

**THE PATENTS ACT, 1970**

**(39 of 1970)**

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**The Patent Rules, 2003**

**COMPLETE SPECIFICATION**


**(See section 10 and rule 13)**

**TITLE OF THE INVENTION**


**"Preparation method and application of polyaniline-nano gold composite material"**

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## FIELD OF THE INVENTION

The invention pertains to the chemical technology area, offers a unique technique with template synthesis one-dimensional structure polyaniline/violent matrix material of gold/titanium dioxide notably, use potassium permanganate and hydrochloric-auric acid one-step synthesis.

## 5 BACKGROUND OF THE INVENTION:

In recent years, phenol and the pollution of phenol compounds to water bodies have received great attention, and China has been identified as a contaminant that requires priority access management in water. Furthermore, p-nitrophenol (4-NP) belongs to the class of highly toxic compounds and is difficult to degrade. It is, therefore, the technical barrier in China and even the rest of the world that prevents the water purification industry from removing phenol and fragrant compound hydrocarbons from drinking water supplies. Furthermore, the toxicity of redazate para-aminophenol (4-AP) of 4-NP is much lower than that of 4-NP, making it an essential chemical industry and medical intermediate at the same time. The conversion of 4-NP to 4-AP may result in the degradation of 4-NP and the production of 4-AP in a cost-effective manner. Many technologies are available for decreasing traditional 4-NP, including absorption technique, microbiological degradation method, photocatalytic degradation method, electrocoagulation method, and electrochemical treatment. Even though the removal of such technique to 4-NP has some impact, there are certain limitations, such as the fact that it cannot be properly degraded, the fact that it is sluggish and secondary pollution of degradation speed.

  
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and so on. In addition, there are increased expectations for operating costs, response time, and equipment, among other things. As a result, how can this field bottleneck issue be remedied as quickly as possible by presenting a realistic, efficient, rapid, and environmentally friendly solution and strategy?

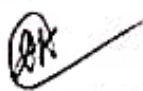
- 5 Nanogold particles (AuNPs) have become more popular due to the fast development of nanoscale technology. They are employed in various applications, including optics, catalysis, electrochemistry, biological sensors, and antibacterial agents.

In this case, when the catalytic power of 4-NP decreases, nano gold catalysis material is becoming more popular due to widespread interest.

- 10 Since this technique has mild conditions, is efficient, is quick, and has advantages such as environmental friendliness and excellent characteristics in phenol wastewater purification, it has been designated as one of the Some Questions To Be Researched in this direction.

The catalytic activity of nanogold grains and their size, distribution, and morphologic correlation was investigated.

- 15 In addition to being an important research objective, getting a nanocatalyst that is small, homogenous, and has a high degree of dispersion, as well as being stable and simple to separate and recover, is also a bottleneck that the real application surface encounters in terms of performance.

  
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Improved stability and catalytic activity of nanogold particles can be achieved by immobilized obtained nm of gold compound catalyze material that nano-metal particle is easily reunited, the disadvantage of separation and recovery difficulty, the structure and characteristics of the carrier, and the interaction between gold and the carrier interface all at the same time may be beneficial to its performance.

In a sense, the core-shell type nano Au catalysis material produces a new, higher-level ordered composite nanoscale package assembly, which is unique in its own right.

There are several benefits to magnetic nanoscale composite materials in general and Fe<sub>3</sub>O<sub>4</sub>/shell/Au magnetic nanometer composite materials.

The magnetic kernel effectively separates catalytic materials using an externally supplied magnetic field, which lowers operating costs and allows for easy control of the reaction's progression.

Moreover, the shell can not only inhibit Fe in nucleocapsid compound  $Fe_3O_4$  reunion, but it can also increase its stability; at the same time, the shell may offer to modify space, which is favorable to the immobilization of AuNPs.

#### SUMMARY OF THE PRESENT INVENTION:

  
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For this invention, the technical difficulty is to propose a cheap and easy-to-use way of making a tri-iron-tetroxide polyaniline gold nanocomposite that performs admirably and can be reused in the application process of p-nitrophenol catalysis pollutant removal.

The invention's tri-iron tetroxide-polyaniline-gold nanocomposite production method includes the following procedures to address the issues of the technologies discussed above:

Step one uses the solvent-thermal approach to get Fe with a particle diameter of 200-350 nm.

Step 2: using the Fe created in step one, make Fe<sub>3</sub>O<sub>4</sub> nanoparticles. This Nanoparticle is water-soluble, and the Fe<sub>3</sub>O<sub>4</sub> quality-volume ratio of Nanoparticle and water is 1-2 milligrams per milliliter. Stirring and then adding PVP at 1-2 milligrams per milliliter according to the quality-volume ratio of PVP to water. After 30 minutes of mixing, solution A is formed, and solution A is agitated for 3 hours at room temperature before aniline monomer and citric acid is added. It is swirled and ultrasonicated for 15 minutes at a mass ratio of 1:4:10:2 before being stirred again for 10 minutes under ice bath conditions following APS and Fe<sub>3</sub>O<sub>4</sub> Core-shell structure Fe<sub>3</sub>O<sub>4</sub>-PANI composite material is formed by adding 5:2 nanoparticles to APS, stirring for 7 to 9 hours, then cleaning the product with distilled water and 100% ethyl alcohol under ice bath conditions; this results in a core-shell structure Fe<sub>3</sub>O<sub>4</sub>-PANI composite material.

The aqueous solution is soluble in water after 10 minutes of magnetic agitation with HAuCl<sub>4</sub> volume ratio of 1:100 by 1wt percent. The sodium borohydride and trisodium citrate aqueous

  
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solution volume ratio is 1:100, and the  $\text{HAuCl}_4$  is doubled to 1wt percent. In contrast, the sodium citrate and trisodium citrate aqueous solution volume ratios are 1wt percent and 0.08wt percent, respectively. Step 3: Using the Fe obtained from step 2 3o 4-PANI composite material of core-shell structure, mechanical agitation ultrasonic 10 minutes, mechanical agitation 3 5 hours at room temperature, with magnet by-product separation, distilled water, and absolute ethyl alcohol is reconstituted. Step 4: Be 0.5 2mg/mL according to quality-volume ratio, the Fe obtained from step 2 3o 4-PANI composite material of the core-shell structure, mechanical agitation


Step 6: be 2 5mg/mL following the quality-volume ratio, add the reduction gold salting liquid obtained in step 5 with the Fe obtained in step 4 3o 4-PANI-Au nanocomposite material, stir, then add formaldehyde at a volume ratio of 400:1 following the reduction gold salting liquid and formaldehyde, reaction 10 minutes;

Step 7: be 2 3mg/mL following the quality.

It is necessary to repeat steps 6 and 7 N times. Prepare a Fe 3o 4-PANI-Au nanocomposite material by continuously washing the product with distilled water and ethanol.

The Fe 3o 4-PANI-Au nanocomposite material stated above may be utilized in the catalysis pollutant.

The following are the invention's advantages over the previous art:

  
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The present invention eliminates the centrifugal process in preparation being loaded down with trifling details, simplifies the preparation process, and does not need professional equipment in the application;

3o 4-PANI composite material is a core-intermediate layer of the core-intermediate layer of the  
5 core-intermediate layer of the core-intermediate layer of the core-intermediate layer of the  
core-intermediate layer of the core-intermediate layer of the core-intermediate layer of the  
core-intermediate layer of the core-intermediate layer, and the Fe of the positively charged 3o  
4-PANI composite material of the core-intermediate layer of the core-intermediate layer is  
compared.

#### 10 BRIEF DESCRIPTION OF THE INVENTION:

Step one: a solvent-thermal approach is used to generate Fe particles with diameters ranging  
from 200 to 350 nanometers. The procedure is as follows: 1g FeCl<sub>3</sub> 36H<sub>2</sub>O and 0.4g trisodium  
citrate are added to 30mL ethylene glycol and allowed to dissolve fully. Under agitation, 2.4g  
anhydrous sodium acetate is added, and the mixture is transferred to a 50mL  
15 polytetrafluoroethylene (PTFE) autoclave after continuing to agitate for 30 minutes. The  
reactor has been reacted for nine hours in an insulating box at 200 degrees Celsius. Following  
the completion of the reaction, allow the product to cool naturally to ambient temperature  
before being separated with a magnet to yield black Fe<sub>3</sub>O<sub>4</sub> nanoparticle, which is then


  
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cleaned three times with distilled water and 100% ethyl alcohol with vacuum drying on standby.

Process for making Fe<sub>3</sub>O<sub>4</sub>-PANI composite material for the core-shell structure (Step 2) make use of the Fe collected in step one Fe<sub>3</sub>O<sub>4</sub> nano particle 0.2g is dissolved in 200mL water, stirred.

- 5 Then 0.2g PVP is added, stirred, and ultrasonically dissolved again. This mixture was prepared for 30 minutes and left at room temperature for 3 hours while continuously stirred. Then, adding 0.1g aniline monomer and 1g citric acid one at a time, stirring and ultrasonically processing for 15 minutes. Stir continuously under the condition of an ice bath for 10 minutes, then add 0.5g ammonium peroxydisulfate (APS) again, stir continuously for 9 hours under the
- 10 condition of an ice bath, after which the product distilled water and absolute ethyl alcohol are cleaned repeatedly; To prepare Fe<sub>3</sub>O<sub>4</sub>-PANI composite material with a core-shell structure, one deck polyaniline is wrapped around one Fe<sub>3</sub>O<sub>4</sub> nano grain surface. Step 3: preparation of gold seed solution: the HAuCl<sub>4</sub> at room temperature is added to 200ml distilled water solution, magnetic agitation for 10 minutes, and the solution is centrifuged to remove any impurities.
- 15 The backward solution in which 2mL 1wt percent trisodium citrate is added first, followed by the addition of 2mL 1wt percent trisodium citrate and 2mL 0.08wt percent sodium borohydride at the same time; A 60-minute magnetic agitation reaction is used to produce nm of gold seed solution, which is then placed on hold.

  
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The following steps are required for the manufacture of Fe<sub>3</sub>O<sub>4</sub>-PANI-Au nanocomposite material: Obtain the Fe that was acquired in step 2 of the process Fe<sub>3</sub>O<sub>4</sub>-PANI composite material with a core-shell structure joins the obtained nm of gold seed solution of 150mL step 3, mechanical agitation ultrasonic 10min, mechanical agitation three h at room temperature, with magnet by-product separation, product distilled water, and absolute ethyl alcohol are cleaned three times, and prepares an nm of gold seed solution of 150mL step 4. The reduction of Fe<sub>3</sub>O<sub>4</sub>-PANI-Au nanocomposite material is accomplished in step 5: add 60mg sodium carbonate to 200ml deionized water after mechanical agitation for 15 minutes, add the chloroauric acid solution of 3ml 1wt percent, and lucifuge magnetic agitation for 12 hours to obtain reducing golden salting liquid for subsequent use.

Step 6: Using the Fe gained in step 4, create a new equation. The Fe<sub>3</sub>O<sub>4</sub>-PANI-Au nanocomposite material is mixed with the 40mL reduction gold salting liquid prepared in step 5, stirred, and then added 0.1mL formaldehyde, resulting in a 10-minute reaction.

After 10 minutes of stirring, add 40mL of golden salting liquid and decrease it by half. After 10 minutes of stirring, add 0.1mL formaldehyde again.

Step 8: Step 7 is performed once more, and the product is repeatedly rinsed with distilled water and ethanol, resulting in the preparation of Fe<sub>3</sub>O<sub>4</sub>-PANI-Au nano composite material.

Figure 1 shows the Fe that is prepared in step one of embodiment 1, and the shape of this Fe<sub>3</sub>O<sub>4</sub> nano particle is globulate, with a particle diameter of 200-300nm; Figure 2 shows the nm

of gold seed that is prepared in step three of embodiment 1, and the shape is that class is spherical, with a particle diameter of about 5nm; Figure 3 shows the nm of gold seed that is prepared in step four of embodiment 1, and the shape is that class is In embodiment 1, step 2 prepares 3o 4-PANI composite material of core-shell structure, which significantly improves the ability of determining composite's nucleocapsid structure; Fig. 3 shows the Fe that was prepared by step 2 3o 4-the partial enlarged drawing of-PANI, which shows that the polyaniline of surface parcel is approximately 10nm; Fig. 4 shows the Fe that was prepared by step 2 3o 4-the partial enlarged drawing of-PANI, which shows that the Figure 6 depicts the Fe that embodiment 1 step 4 generates 3o 4-PANI-Au nano composite material, which can be distinguished by the substantial adsorption of polyaniline on one deck nm of gold seed. Fig. 7 embodiment one successfully makes a 3o 4-PANI-Au nanocomposite material. It can be seen that there is a reduction reaction in the golden salting liquid of reduction following, gold seeds are grown up, and adjacent gold seeds touch eventually forms the shell of gold.

Compared with embodiment 1, the difference is only that step 2 prepares Fe 3o 4-PANI composite material of the core-shell structure, that is: take the Fe that step one is obtained 3o 4nano particle 0.2g is dissolved in 200ml. water, stirred, and then added 0.2g PVP, swirled and ultrasonicated for 30 minutes, after which the combined solution is allowed to sit at room temperature for 3 hours, stirring. Then, adding 0.2g aniline monomer and 1g citric acid one at a time, stir, and ultrasonic for 15 minutes, the mixture is complete. Within 10 minutes, add 0.5g ammonium peroxydisulfate (APS) again and stir for 9 hours under the condition of an ice bath.


The product is cleansed many times with pure water and 100% ethyl alcohol after thoroughly rinsing.

As a result, when comparing embodiments 1 and 2, the amount of aniline monomer added increases, causing the surface coated polyaniline of tri-iron tetroxide to thicken. This point can be compared with diagram 4 and Fig. 5 Fe 3o 4the partial enlarged drawing of-PANI draws, which can significantly find out Fe in embodiment two by figure 3o 4the polyaniline of-PANI composite material of core-shell structure thickens more than in embodiment 1.

Namely, Fe can be regulated and controlled by the mass ratio of regulation and control aniline monomer and tri-iron tetroxide 3o 4-PANI composite material of core-shell structure shell thickness.

The present invention, while it has been described concerning the accompanying drawings above, does not limit itself to that detailed description; rather, it is only schematic, rather than restrictive; those of ordinary skill in the art are under enlightenment as to the present invention; when not departing from the present inventive concept, can also cause a great deal of distortion; all of these are included in the scope of the present invention, and the present invention is not limited to that scope.

Other embodiments of the present disclosure will also become readily apparent to those skilled in the art from the following detailed description of the embodiments concerning the

  
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accompanying figures, the intention not being limited to any particular embodiment or any particular set of embodiments disclosed in any particular case.


While the present invention is described herein by example using embodiments and illustrative drawings, those skilled in the art will recognize that the invention is not limited to the images of drawing or drawings described and are not intended to represent the various scale components. Further, some features that may form a part of the invention may not be illustrated in specific figures for ease of illustration. Such omissions do not limit the embodiments outlined in any way. It should be understood that the drawings and detailed descriptions are not intended to limit the invention to the particular form disclosed. Still, on the contrary, the story is to cover all modifications, equivalents, and alternatives falling within the scope of the present invention as defined by the appended claims. As used throughout


In this description, the word "may" is used in a permissive sense (i.e., meaning having the potential to) rather than the mandatory reason (i.e., meaning must).

Further, the words "a" or "an" mean "at least one," and the word "plurality" means "one or more" unless otherwise mentioned. Furthermore, the terminology and phraseology used herein are solely for descriptive purposes and should not be construed as limiting. Language such as "including," "comprising," "having," "containing," or "involving," and variations thereof, is intended to be broad and encompass the subject matter listed after that, equivalents, and additional subject matter not recited, and is not intended to exclude other additives, components, integers or steps. Likewise, the term "comprising" is considered synonymous with the words "including" or "containing" for applicable legal

purposes. Any discussion of documents, materials, devices, articles, and the like are included in the specification solely to provide a context for the present invention. It is not suggested or represented that any or all of these matters form part of the prior art base or were common general knowledge in the field relevant to the present invention.

- 5 In this disclosure, whenever a composition or an element or a group of elements is preceded with the transitional phrase "comprising," it is understood that we also contemplate the same design, component or group of elements with transitional words "consisting of," "consisting," "selected from the group of consisting of," "including," or "is" preceding the recitation of the composition, element or group of elements and vice versa.
- 10 The present invention is described from various embodiments concerning the accompanying drawings, wherein reference numerals used in the accompanying drawing correspond to the like elements throughout the description. However, this invention may be embodied in many different forms and should not be construed as limited to the embodiment. Instead, the image is provided so that this disclosure will be thorough and complete and fully convey the
- 15 invention's scope to those skilled in the art. The following detailed description provides numeric values and ranges for various implementations described. These values and ranges are treated as examples only and are not intended to limit the claims' scope. Also, several materials are identified as suitable for various facets of the implementations. These materials are to be treated as exemplary and are not intended to limit the invention's scope.

  
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A more particular description will be rendered by referencing specific embodiments illustrated in the appended drawings to clarify various aspects of some example embodiments of the present invention. It is appreciated that these drawings depict only illustrated embodiments of the story and are therefore not considered limiting its scope. The invention will be described and explained with additional specificity and detail through the accompanying drawings.

So that the advantages of the present invention will be readily understood, A detailed description of the story is discussed below in conjunction with the appended drawings, which should not be considered to limit the scope of the invention to the accompanying drawings.


Further, another user interface can also be used with the relevant modification to provide the results above with the same modules, its principal, and protocols for the present invention.

It is to be understood that the above description is intended to be illustrative and not restrictive.

For example, the above-discussed embodiments may be used in combination. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description.

The benefits and advantages which the present invention may provide have been described above about specific embodiments. These benefits and advantages and any elements or limitations that may cause them to occur or become more pronounced are not construed as critical, required, or essential features of any or all embodiments.

While the present invention has been described concerning particular embodiments, it should be understood that the images are illustrative and that its scope is not limited to these

  
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embodiments. Many modifications, additions, and improvements to the embodiments above are possible. It is contemplated that these variations, changes, additions, and improvements fall within the invention's scope.

**We Claim:**

1. The following are the processes in the creation of a tri-iron tetroxide-polyaniline-gold nanocomposite:

Using the solvent-thermal technique, get Fe with a 200-350nm particle diameter. Three  
5 Nanoparticle; four Nanoparticle; two Nanoparticle This Nanoparticle is water-soluble,  
and Fe<sub>3</sub>O<sub>4</sub> quality-volume ratio of Nanoparticle and water is 1:2 milligrams per  
milliliter. Stirring and then adding PVP at one or 1/2 milligrammes per millilitre  
according to the quality-volume ratio of PVP to water. After 30 minutes of mixing,  
solution A is formed, and solution A is agitated for 3 hours at room temperature before  
10 aniline monomer, and citric acid are added in turn. It is swirled and ultrasonicated for  
15 minutes at a mass ratio of 1:4:10:2 before being stirred again for 10 minutes under  
ice bath conditions by APS and Fe<sub>3</sub>O<sub>4</sub>, the mass ratio of Nanoparticle is 5:2, APS  
is added, and the mixture is stirred for 7-9 hours before being cleaned with distilled  
water and 100% ethyl alcohol several times in an ice bath. Thus, the Fe<sub>3</sub>O<sub>4</sub>-PANI  
15 composite material of the core-shell structure is prepared by wrapping around one deck  
PANI on the Fe<sub>3</sub>O<sub>4</sub> nano grain surface.

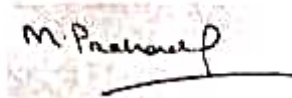
  
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2. To create a reducing golden salting liquid for later use, add sodium carbonate to distilled water at a concentration of 0.3 mg/ml by the quality-volume ratio. After 15 minutes of mechanical agitation, add 1 weight percent aqueous solution of chloraurate.
3. Accordance to the HAuCl<sub>4</sub> of volume ratio 1:100 by 1wt percent 4the aqueous solution is soluble in water, magnetic agitation 10min; Be the trisodium citrate that 1:100 adds 1wt percent according to the volume ratio of trisodium citrate and water, then add the HAuCl<sub>4</sub> doubling 1wt percent concurrently 4the 1wt percent trisodium citrate of aqueous solution volume and 0.08wt percent sodium borohydride; Magnetic agitation reaction 30 ~ 60min, prepares nm of gold seed solution.
4. The present invention uses a seed-mediated growth method trapping gold shells based on adsorption of gold seed, and the existence of golden shell effectively can reduce the loss that comes off of nm of gold in the application process, substantially increases recycling ability.

Dated this 23<sup>rd</sup> day of March 2022

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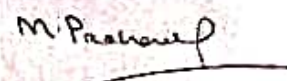
## ABSTRACT

### Preparation method and application of polyaniline-nano gold composite material

According to this invention, a ferriferous oxide-polyaniline-gold nanocomposite material may be prepared in various ways. Using the solvothermal method, nano Fe<sub>3</sub>O<sub>4</sub> is synthesized, and it is used as the core of composite material; Fe<sub>3</sub>O<sub>4</sub> is dispersed in a PVP solution; aniline monomer, citric acid, and initiator ammonium peroxydisulfate are added under ice bath and continue stirring to form polyaniline on the surface of nano Fe<sub>3</sub>O<sub>4</sub> via polymerization. A Fe<sub>3</sub>O<sub>4</sub>-PANI core-shell structure composite mat is obtained. Because it is inexpensive, easy to make, and provides high performance, ferriferous oxide/polyaniline/gold nanocomposite material is a suitable catalyst for catalyzing pollutant p-nitrophenol. The catalyst made from this material may be reused.

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