

**TRUMP in the field of Medical industry**

**----- Medical imaging system**

## **Gastrointestinal Imaging System**

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# **Gastrointestinal Imaging System**

*Hundreds of millions of people in the world are suffering from gastrointestinal diseases. Doctors need the help of new medical device to diagnose the small intestine (5-7 meters long) which can't be detected by traditional methods.*

*The diagnoses of esophagus, stomach and colon have been resolved since digestive endoscope technology was invented, such as radiology, fiberscope, intestinal endoscope and ultrasonic. But these methods can hardly diagnose the whole small intestine with clear images, and may bring pain and hurt to patients.*

*Now this world advanced Imaging System can help Doctors and benefit patients deeply!*

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# Capsule Endoscope

*The most advanced Gastrointestinal imaging system in the world  
The ideal Gastrointestinal diagnostic system*

## Introduction:

Gastrointestinal capsule endoscope imaging system is a typical MEMS product, which integrates the technologies such as image processing, information communication, optoelectronic engineering, computer and biomedical engineering. Overcoming the drawbacks of traditional endoscope, this new system can make a whole examination of stomach, small intestine, and large intestine by swallowing a capsule endoscope. With small volume, lightweight, convenience, non-invasive and painless procedure, no cross-infection and no influence on the life of patient. Gastrointestinal capsule endoscope imaging system can be successfully applied in biomedical field.

## Absolutely Advantages:

### ·Vision Extension

It records clear true-color pictures of the entire small intestine, which breaks through the blind zone, and greatly increases the detection rate of small intestine examination.

### ·Operating Facility

The diagnostic procedure includes three parts: ingesting capsule, capturing images automatically and playing back images. Doctors can diagnose gastrointestinal disease by playing back images with Image Workstation.

### ·Safety and Healthiness

The non-invasive diagnosis provides patients with safe examination, and the disposable Smart Capsule whose shell is made of biocompatible macromolecule plastic can avoid cross infection effectively.

### ·Comfortable for Patients

As the whole examination procedure is painless and does not require sedation, patients only need to ingest one capsule, not have to lie in bed or even stay in hospital during the procedure.

## Configuration:

The system consists of three parts: Smart Capsule, Image Recorder and Image Workstation.

## Smart Capsule

- Operating time: 6-8 hour
- Visual angle: 140 °
- Effective visibility: 3cm
- Resolution power: 0.1mm
- Size: 11.0mm \* 25.4mm
- Weight: < 6g
- Material: Biocompatible macromolecule plastic



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## Image Recorder

- Access speed: 2-15 fps
- Communication mode: Duplex dual-channel
- Storage medium: Compact Flash card
- I/O port: USB 1.1/2.0
- Battery type: Build-in lithium cell



## Image Workstation

- Hardware: Computer, color printer, trolley
- Software: OMOM Image Workstation
- Language: English/Chinese
- Supporting image format: JPEG/BMP
- Playback speed: 1-30 fps
- Monitor mode: Real-time monitor, multi-channel monitor
- Other features: Image export, on-line help, database back up



## Working Principles

### *Easy and Convenient Diagnostic Procedure*

After being ingested the intelligent pill with water by patient, the capsule travels through the alimentary tract with the muscular peristalsis. Meanwhile, it captures pictures consecutively and transmits digital signals to the image recorder for storage, which is worn by patient. The operating time of the Smart Capsules is approximately 6-8 hours, and then the capsule will be excreted out naturally. Doctors will browse through the pictures with image Workstations and finish the diagnosis.



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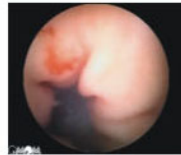
## The imaging of some Clinical Cases



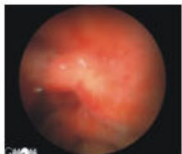
gastric polypcb



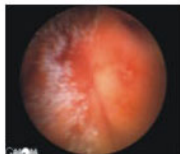
superficial/mild  
erosive gastritis



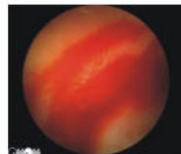
gastric mucosa bleeding



erosive gastritis



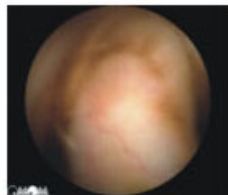
duodenal ulcer



duodenal bleeding



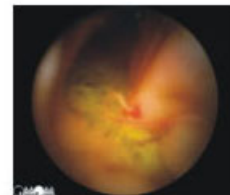
Crohn's disease



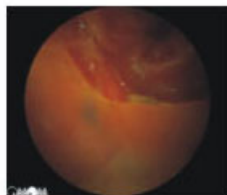
enteric carcinoid



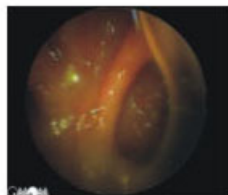
enteric polyp



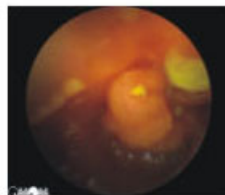
Ancylostomiasis



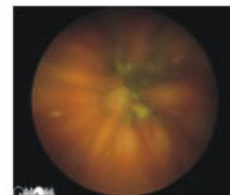
intestinal angioma



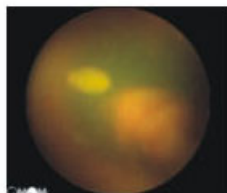
intestinal diverticulum



ileum terminal protruding



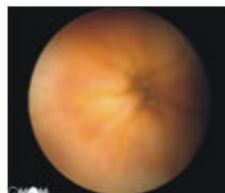
intestinal tuberculosis



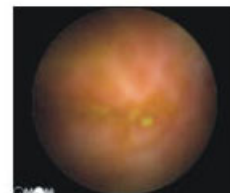
jejunal polyp



jejunal place-holding  
bleeding



colonic bleeding



erosive colonitis

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## **Indications**

This imaging system is aimed for the visualization of bellyache, diarrhoea, hemorrhage of digestive tract, small intestine cancerous, Crohn's disease and other small intestine diseases. The indications of the device are:

- Patients with hemorrhage of digestive tract but reason unknown, and these whose tests for the upper digestive tract and bowels endoscope examination are negative
- Patients with other tests display abnormality of small intestine
- Patients with various inflammations of intestines, except ileuses and narrow intestine
- Patients with unexplainable bellyache and diarrhoea
- Patients with small intestine tumor (benign, galloping, or cancerous)
- Patients with iron deficiency anemia with reason unknown

## **Contraindications**

The Capsule Endoscopy System is contraindicated for use under the following conditions:

- Patients with known or suspected digestive tract malformation, gastrointestinal obstruction, strictures, or fistulas based on the clinic picture or pre-procedure testing and profile.
- Patients with cardiac pacemakers or other implantable electromedical devices.
- Patients with swallowing disorders.
- Patients with various acute enteritis, serious ischemia diseases, radioactive colonitis, such as season of bacillary dysentery action, acute stage ulcerative colitis, especially patients of fulminating form are forbidden to use.
- It is forbidden to patients who are sensitive to high molecular material.