

## OPTICAL FORCE TRANSDUCER


### KEYWORDS

- Medical Device
- Force Sensing
- Force Feedback
- Minimally invasive

#### Collaboration type

Licence agreement  
Research cooperation

#### IP Status

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#### Inventors

Dr. Jacques Deviere

### THE INVENTION

Nowadays a trend in surgery is to operate in a minimally invasive way inside the patient in order to reduce trauma and potential complications. In this field, the manipulation of any medical tool is subject to parasitic forces, such as friction or forces induced by the change of curvature, implying the force felt by the scientist is not the force exerted by the tool inside the patient body. Therefore, there is a need of a force measurement and force feedback system. This can be applied in diagnostic and in therapeutic applications. The present invention is relative to a force transducer comprising strain sensing optical fibres able to measure the interaction force between the surgical tool and the tissue and to a force feedback system that can recreate the interaction force between the tools and the tissue.

### COMMERCIAL INTEREST

Potential applications in the following fields :

- Urology
- Cardiology
- Pneumology
- Radiology
- Ophtalmology

### KEY ADVANTAGE OF THE TECHNOLOGY

- Highly sensitive in a number of predetermined degrees of freedom
- Non electrical signal
- Can be adapted to a wide range of configurations and applications

### CONTACT

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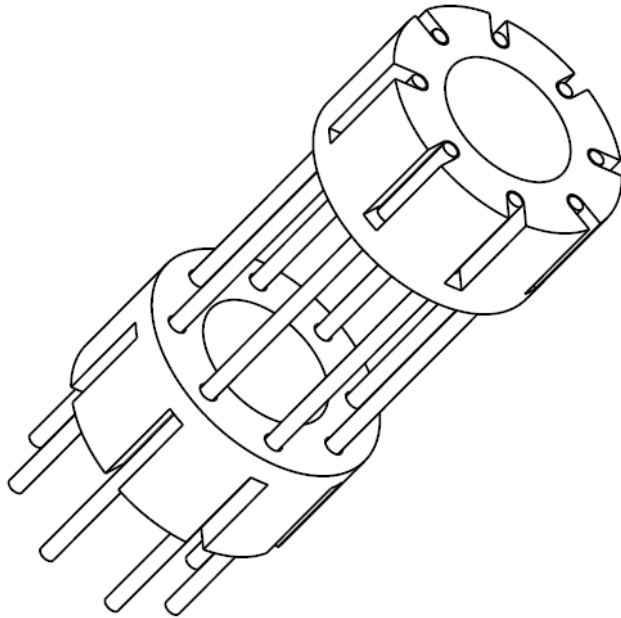
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## THE INVENTOR

Dr Jacques Deviere is currently Chairman of the Department of Gastroenterology at the Erasme University Hospital, Brussels, Belgium; this includes gastroenterology, hepatology, GI oncology, endoscopy, and liver transplantation. His particular research interests include therapeutic endoscopy, liver diseases, and pathophysiology of pancreatic diseases. Dr Deviere has been general secretary of the Royal Belgian Society of Gastroenterology from 1996 to 2001. He is member of the Board and Treasurer of the European Society of Gastrointestinal Endoscopy.



Since 1982, he organizes every year, a large international course called «GEEW» (Gastroenterology and Endotherapy European Workshop) and since a few years, small «Single Topic» workshops devoted to specific problems and also including live demonstrations. He is author or co-author of 200 PubMed referenced publications, and has written 15 books chapters.

## THE TEAM

For many years, there is a strong collaboration between the Faculty of Medicine, especially the Department of Gastroenterology, and the Bio-, Electro- And Mechanical Systems (BEAMS) department of the Faculty of Applied Sciences (School of Engineering) of the Université Libre de Bruxelles.

This partnership has led to many research projects, patent applications and prototypes in the field of biomedical engineering.

The multidisciplinary nature of BEAMS enables the team to deal with biomedical engineering problems involving micro-techniques, mechanics, electro-mechanics, electrical engineering and electronics.

## THE MAIN BIOMEDICAL RESEARCH AXES OF THE BEAMS DEPARTMENT ARE:

- Flexible therapeutic endoscopy: modeling, design and development of flexible devices for gastroenterology like Triangulation system, guide wire, needle and other therapeutic tools;
- Biomedical instrumentation: cardio respiratory monitoring, EEG, EMG, electro-stimulation,
- Mini-invasive surgery: modeling, design and development of devices like surgical tools for endoscopic interventions, laparoscopic tools for hepatic surgery, implantable pumps for drug delivery.