

## **Atmosfer Technology Transfer Office ,Turkey**

Atmosfer Technology Transfer Office (TTO) provides service as interface between academy and industry in order to commercialize the intellectual capital and new technologies obtained from academic studies. In 2013, Atmosfer TTO was founded in Izmir Institute of Technology within Techno park Izmir in the scope of TUBITAK 1513 TTO Support Program.

- To provide consultancy services related to national and international support programs,
- To strengthen the relationships with the activities such as representation and informing activities of University and Industry Unions, to take active role in the possible cooperation and programming and execution of R&D projects,
- To provide consultancy to academicians and researchers about obtaining and managing Intellectual and Industrial Property Rights of Intellectual capital,
- To give training of entrepreneurship about technology and R&D-oriented attempts, to provide consultancy for incorporation and business.

### **Services**

#### **Project Development and Management**

To provide consultancy services related to national and international support programs (TUBITAK, ARDEB, TEYDEB, Entrepreneurship, Scientific Activity Support Programs, Horizon 2020, EUREKA, Eurostars, COST, San-Tez, Techno-attempt) and support the information, promotion, communication, coordination, creation and execution of projects.

#### **Intellectual and Industrial Property Rights**

To provide consultancy services related to Intellectual and Industrial Property Rights (patent, model, brand, license etc.), to take part in execution of the contracts of academicians, to give awareness training, to support the process of confidentiality etc. in partner projects of academicians and industry, to manage the process of research, patents and licenses with high-level commercializing potential and to manage the licensing process of patent pool in suitable international markets.

#### **Industrial Marketing**

To announce and introduce projects made in the University to industrial institutions, to determine the R&D project demand by visiting industrial institutions, to find and match academicians to stimulate projects between university and industry, to enable the infrastructures of universities (such as laboratories) to be evaluated by special sector institutions and organize events such as project markets and competitions.

#### **Entrepreneurship and Incorporation**

To promote and support company foundation originating from university  
To give consultancy support in financial, administrative and legal issues  
To offer coaching support via "Mentor Pool"

To provide access to financial sources

To enrich the eco-system of entrepreneurship with Techno- Entrepreneurship Trainings

To support the enterprises in Incubation Center

- **Sector** :Technology Transfer

### **Team**

- MEGAN BARISIK, International Programs Coordinator
- MIRAY KARAKUZU, IPR Coordinator at Atmosfer Teknoloji Transfer Ofisi | Atmosfer TTO
- AYLIN KAYNAK, TTO Manager
- EMRAH TOMUR, Technology Transfer Manager at IYTE Atmosfer Teknoloji Transfer Ofisi
- MIRAY SANLI, Project Development and Management Coordinator

---

## **Microfluidic Device For Investigation Of Distance Dependent Interactions In Cell Biology**

**Sector** :Biotechnology

The invention presents a microfluidic device that provides investigation of distance dependent interactions between cells and various factors. A method that uses the device to determine distance dependent interactions between cells and various factors and agents that can change these interactions is also presented.

### **Description**

Interactions of cells with factors such as same or different types of cells, soluble factors or matrix bound soluble factors, depend on the distances between cells and the factors. For example, breast cancer cells that express epidermal growth factor receptor move towards the source of epidermal growth factor source. Different cells can show different interaction mechanisms such as autocrine, juxtacrine, paracrine, endocrine signaling. Cells can give chemotactic, haptotactic, durotactic responses to different factors. Research in cancer, stem cells, immunology, development, endocrinology, neuroscience etc. require better devices that can investigate interactions of cells with factors such as those mentioned above.

DDI-chip allows for investigation of many different types of interactions which are central to proper functioning of cells in our bodies. To enable efficient research that will provide cures for many different types of diseases from cancer to atherosclerosis, the DDI-Chip provides a low-cost and effective solution to the pharmaceutical industry, medical, and life sciences research.

### **Primary Benefits**

Microfluidic technology provides precise spatial and temporal control, highthroughput analysis, low fabrication costs ve portability. Used material and waste volumes can be as low as picoliters. Using small volumes of unknown or toxic materials provides safe experimental study. Moreover, microfluidic technology can provide means to mimic physiological microenvironments. This feature can help us more realistically study cells in both health and disease states and improve drug testing approaches. It can also help reduce animal testing.

### **Development Status**

- **Stage of Development** : Pre-Commercial use
- **Time to Market** : Less than 1 year

### **Market & Competition**

BCC Research estimates lab-on-a-chip market to be 10.3 billion dollars in 2017. Foresight estimates drug discovery and screening market to be 21.6 billion dollars in 2018. Potential customers for the DDI-chip are the pharmaceutical industry and researchers in life and medical sciences.

**Potential Sectors**

Pharmaceutical

**Potential Regions**

EU

United States

**Interest In**

For further information please contact IYTE ATMOSFER TTO.  
(miray.karakuzu@atmosfertto.com)

---

## **Three Dimensional Microfluidic Device That Determines Metastatic Capacity And Homing Device**

**Sector :**Biotechnology

The invention provides a device that mimics the in vivo tumor microenvironment comprising different cell types, matrices, biological molecules and chemicals. All steps of metastasis, namely, angiogenesis, matrix invasion, cell migration, intravasation, circulation, extravasation and new tumor formation, in addition to homing choices of cancer cells can simultaneously and jointly be investigated using the said microfluidic device.

### **Description**

The MetaHomingChip is a microfluidic device that determines metastatic capacity and homing choices. The device mimics the in vivo tumor microenvironment comprising different cell types, matrices, biological molecules and chemicals. All steps of metastasis, namely, angiogenesis, matrix invasion, cell migration, intravasation, circulation, extravasation and new tumor formation, can be simultaneously and jointly investigated using MetaHomingChip. In addition, the chip allows testing of the effectiveness and specificity of anti-metastatic drugs. Furthermore, cancer cells are known to prefer certain sites in the body to form secondary tumors. The answer to 'where tumor cells metastasize to' have prognostic value. For example, breast cancer metastasizing to the lungs has a poorer prognosis than that metastasizing to the bone. Therefore, determining the homing choices will help select the best course of treatment and enable personalized medicine.

### **Primary Benefits**

Microfluidic technology provides precise spatial and temporal control, highthroughput analysis, low fabrication costs ve portability. Used material and waste volumes can be as low as picoliters. Using small volumes of unknown or toxic materials provides safe experimental study. Moreover, microfluidic technology can provide means to mimic physiological microenvironments. This feature can help us more realistically study cells in both health and disease states and improve drug testing approaches. It can also help reduce animal testing.

### **Development Status**

- **Stage of Development :** Prototype
- **Time to Market :** 1-3 year

### **Market & Competition**

BCC Research estimates lab-on-a-chip market to be 10.3 billion dollars in 2017. Foresight estimates drug discovery and screening market to be 21.6 billion dollars in 2018. Potential customers for the DDI-chip are the pharmaceutical industry and researchers in life and medical sciences.

### **Potential Sectors**

### **Potential Regions**

Biotechnology

EU

**Interest In**

For further information please contact IYTE ATMOSFER TTO.  
(miray.karakuzu@atmosfertto.com)

## **Bir Fosfor Dönüşümlü Beyaz Led Paketi**

**Sector** :Energy

Beyaz ışık yayan LED ışık kaynağı elde etme yollarından birisi fosfor dönüşümlü beyaz LED paketleridir. Fosfor dönüşümlü beyaz LED paketinde cam küre formunda optik elemanlar kullanılarak fosfor kullanım miktarı azaltılmıştır. Bununla birlikte tekniğin öncesinde beyaz ışık sıcaklığının değiştirilmesi için farklı türde ve/veya miktarda fosfor kullanılması gerekirken, mevcut buluşta kullanılan fosfor tipi ve miktarı değiştirilmeden optik eleman kullanım miktarının değiştirilmesiyle farklı sıcaklıklarda beyaz ışık üreten LED paketleri oluşturulabilmektedir.

### **Description**

Buluşun amacı, fosfor kullanım miktarı azaltmış bir fosfor dönüşümlü beyaz LED paketi gerçekleştirmektir. Sabit türde ve kütlede fosfor taneciği kullanılarak LED paketinin üreteceği beyaz 20 ışık renk sıcaklığının değiştirebildiği bir LED paketi gerçekleştirmektir.

Buluş konusu fosfor dönüşümlü beyaz LED paketinin uygulamalarında en az bir mavi LED yongası, mavi LED yongasının karşısına konumlanmış bir alttaş, alttaşın mavi LED yongasına bakan yüzeyi üzerinde 20 konumlanmış bir tutucu ortam ve dalgaboyu dönüştürücü fosfor tanecikleri (örneğin YAG:Ce+3) içeren bir dönüştürücü katman ve optik elemanlar içermektedir. Buluşun birinci uygulamasında optik elemanlar tutucu ortam ve fosfor 25 tanecikleri içeren dönüştürücü katman içerisinde homojen olarak dağılmış şekilde yer almaktadır. Buluşun bir ikinci uygulamasında optik elemanların dönüştürücü katman içerisinde yer alması yerine bir ikinci katman halinde dönüştürücü katman üzerinde yer almaktadır.

### **Primary Benefits**

Fosfor dönüşümlü beyaz LED paketlerinde kullanılan fosfor miktarının düşürülmesi yoluyla, önemli ekonomik katkılar sağlayarak, beyaz LED üretim maliyetlerinin düşürülmesi.

### **Development Status**

- **Stage of Development** : Proof of Concept
- **Time to Market** : 1-3 year

### **Market & Competition**

Hedef pazar öncelikli olarak aydınlatma sistemleridir.

#### **Potential Sectors**

Energy

#### **Potential Regions**

Turkey  
EU

## **Interest In**

Daha fazla bilgi için İYTE ATMOSFER TTO ile iletişime geçin.  
(miray.karakuzu@atmosfertto.com)



## Kandaki Kreatinin Miktarının Belirlenmesi İçin Bir Sistem Ve Yöntem

**Sector :**Healthcare

Buluş anti-kreatinin antikorlar ile kaplanmış bir başlık ile kandaki kreatininin yakalanması ve renk ölçümsel ölçüm yöntemleri/sistemleri kullanılarak kandaki kreatinin miktarının belirlenmesi ile ilgilidir.

### Description

Buluş böbrek hastalarının takibinde yoğunlukla kullanılan kreatinin ölçümüne yönelik bir sistem ve yöntem sunmaktadır. Anti-kreatinin antikorlar ile kaplanmış bir başlık ile kandaki kreatininin yakalanması ve renk ölçümsel ölçüm yöntemleri/sistemleri kullanılarak kandaki kreatinin miktarının belirlenmesi sağlanmaktadır.

Başvuru konusu sistemde ve yöntemde tekniğin öncesinde yer alan manüel veya otomatik pipetler, aktif veya pasif pompalar kullanılmadığından kan örneği miktarı ve/veya enzim miktarı doğru oluşturulmadığında gerçekleşen hatalı kreatinin ölçümü durumunun önüne geçilmektedir. Bununla birlikte kan örneğindeki kreatinin öncelikli olarak yakalanmaktadır. Böylece kan içerisinde yer alan kreatinin dışı maddelerin oluşacak renkli çözelti rengini etkilemesi ve dolayısıyla kreatinin miktarı tespitinin doğruluğunu azaltması engellenir. Tekniğin öncesine oranla kandaki kreatinin tespiti daha hassas gerçekleşir. Sonuç olarak kandaki kreatinin miktarının belirlenmesi için tekniğin öncesine oranla hata oranı ve tespit süresi daha düşük bir sistem ve yöntem elde edilmiştir.

### Primary Benefits

- Kreatinin ölçüm hassasiyetinin arttırılması.
- Ölçüm süresi ve maliyetlerinin düşürülmesi.

### Development Status

- **Stage of Development :** Concept
- **Time to Market :** 3-5 year

### Market & Competition

Kronik hastalıkların artması ve yaşam süresinin artması ile yerinde teşhis/bakım (point of care) sektörü gittikçe önem kazanmaktadır. Böbrek fonksiyon testlerinin pazar büyüklüğünün 20205 yılında 1,9 milyar Dolar olması beklenmektedir.

### Potential Sectors

Healthcare

### Potential Regions

Turkey  
EU

### Interest In

Daha fazla bilgi için İYTE ATMOSFER TTO ile iletişime geçin.  
(miray.karakuzu@atmosfertto.com)

## Whey Isolate Film Reinforced With Zein Nanoparticles

**Sector :**Materials

The invention is a raw material; as a whey isolate nanocomposit , obtained by adding zein nanoparticle coated by sodium caseinate. The main target of this material is food packaging.

### Description

Whey is being used in food packaging industry, due to is mechanical properties as eatable film or food additive. The invention is a raw material; as a whey isolate nanocomposit , obtained by adding zein nanoparticle coated by sodium caseinate. The main target of this material is food packaging.

### Primary Benefits

Whey is being used in food packaging industry, due to is mechanical properties as eatable film or food additive. The proposed production method resolves, the disadvantages of whey. So that, environment friendly, biodegradable food packaging material can be produces from synthetic polimers. Also by this method, an important waste of food industry can be utilized.

### Development Status

- **Stage of Development :** Prototip
- **Time to Market :** 1-3 yıl

### Market & Competition

Food packaging industry

#### Potential Sectors

Materials  
Foods

#### Potential Regions

Turkey  
EU

### Interest In

For further information please contact İYTE ATMOSFER TTO.  
(miray.karakuzu@atmosfertto.com)

## **Innovation In The Manufacturing Of Porous Structural Building Materials**

**Sector :**Materials

The invention relates to glass and/or ceramic based structural building materials porous building blocks having a porous internal structure. The invention, in particular, relates to building materials having porous structure made of glass materials in which the porous structure can be produced under room temperature conditions.

### **Description**

The innovation in the foam glass production is in forming the pore structure at room temperature conditions using a liquid suspension. While the conventional technique uses a mixture - pressing - sintering - cooling production route the new technique uses raw materials in liquid/solid suspension mixture - casting of slurry into molds - drying - and sintering route. The most radical change in the proposed technique is in the removal of the foaming process in the conventional technique replaced by the foaming during the liquid/solid suspension mixture stage in the new process. The liquid/solid suspension can also be referred to as the casting slurry. The foaming process in the liquid/solid suspension mixture stage is achieved by using additives that promote or cause gas formation. This process takes place at room temperature conditions. In addition, this method allows a control over the uniformity in pore distribution and the pore size distribution in the slurry mix.

### **Primary Benefits**

- Increasing performance of porous building materials, in terms of thermal and noise isolation.
- To achieve control over a uniform pore size and pore distribution in the finished product.
- Energy efficiency by foaming at room temperature conditions compared to the high sintering temperatures of the current technique,
- Improvement in the mechanical properties of the finished product through controlled pore formation
- Control over a uniform pore size and pore distribution in the finished product

### **Development Status**

- **Stage of Development :** Pre-Commercial use
- **Time to Market :** 1 yıldan az

### **Market & Competition**

Potential application area is materials for construction sector.

#### **Potential Sectors**

Materials

#### **Potential Regions**

Turkey

EU

**Interest In**

For further information please contact İYTE ATMOSFER TTO.  
(miray.karakuzu@atmosfertto.com)

## Katlanabilir Kafes Yapı

**Sector :**Mechanical

Buluş özellikle, katlanabilir çadır, üst örtü, pano ve benzeri sistemlerde kullanılabilen katlanabilir bir iskelet yapısı üzerinedir. Bu tarz iskelet yapılar genellikle çubuk ve eklemlerden oluşmakta olup buluşun mevcut yapılardan farkı Altmann mekanizması kullanılarak elde edilen farklı çubuk dizilimi ve eklem bağlantılarıdır. Buluşun mevcut yapılardan üstünlüğü açılma sırasında çubukların üzerinde gerilim bulunmamasıdır.

### Description

Günümüzde, katlanabilir yapılarda katlanma işlevi gereği hareketli mekanizmalar bulunmaktadır ve bu hareketli kısımlardan dolayı yapı açıldığında yeterli mukavemeti sağlamak problem olmaktadır.

Buluş, katlanabilir çift tabakalı kafes sistem olup bu sistem katlanabilir çadır, üst örtü, pano ve benzeri yapılarda kullanılabilir. Katlanabilir çadır ve üst örtüler askeri karargâh ve barınak olarak, afet sonrası geçici barınak olarak ya da sosyal etkinliklerde kullanılabilir. Katlanabilir panolar ise reklam panosu ve standı olarak kullanılabilir.

Denge-geçiş özellikli ve çubuk çiftleri aynı düzlemde olan sistemlere alternatif olarak Altmann mekanizması kullanılarak yeni bir katlanabilir çift katmanlı yapı birimi geliştirilmiştir. Bu sistemde denge geçiş özellikli çubukların kullanılması gerekmekte ve sistem kolaylıkla açılıp kapanabilmektedir.

### Primary Benefits

Katlanabilir yapılarda mukavemeti arttırmak, açılma işlemi zorluğunu azaltmak ve hem açma/katlama sırasında hem de yapının üzerindeki yağış ve rüzgar yükleri nedeni ile çubukların kırılmasının önüne geçmek

### Development Status

- **Stage of Development :** Proof of Concept
- **Time to Market :** Less than 1 year

### Market & Competition

Teknolojinin ana hedef kitlesi, savunma sanayi ve acil durum hizmetleridir. Ürünün son haline getirilmesi ve piyasaya sunulmasında sektörden bir ortaklığa ihtiyaç duyulmaktadır.

### Potential Sectors

Mechanical  
Other

### Potential Regions

Turkey  
EU

## **Interest In**

Daha fazla bilgi için İYTE ATMOSFER TTO ile iletişime geçin.  
(miray.karakuzu@atmosfertto.com)

---

## **Essential Oil Loaded Chitosan/nanoclay Nanocomposite Delivery System For Gastrointestinal System**

**Sector** :Pharmaceutical

This invention is related with eradication and/or prevention therapy of H.pylori that provides better diffusion to mucus layer and stabilization in gastric conditions of Essential oils in chitosan/nanoclay microspheres are capsulated which are localized in gastrointestinal system for local treatment of infection caused by Helicobacter pylori (H.pylori) and/or improve the drug release.

### **Description**

H.pylori is a Gram-negative bacterium which has high prevalence in the world, plays role in cronic gastritis, peptic ulcer and is associated with mucosal related lenfoid tissue lymphoma (MALT). Successful treatment of H. pylori infection requires combination therapy, consisting of one or two antibiotics, an acid inhibitör and/or a bismuth component. However, none of these drugs is effective enough to eradicate H. pylori in monotherapy and, such a combination of treatments does not always offer a complete cure and undesirable side effects are often observed.

This invention relates to encapsulation of essential oils in chitosan/nanoclay microspheres which are localized in gastrointestinal system for local treatment of infection caused by Helicobacter pylori (H.pylori) and/or improve the drug release.

### **Primary Benefits**

- Decreasing the side and toxic effects of synthetic drugs by using biopolymers such as chitosan,
- Development of mucoadhesive gastroretentive system with controlled release of essential oil which has antimicrobial activity against H.pylori,
- Prevention adhesion of H.pylori to gastric mucosa with mucoadhesive chitosan and thus providing preventive therapy as well as eradication,
- Regeneration of damaged gastric tissue by this chitosan and essential oil containing nanocomposite.

### **Development Status**

- **Stage of Development** : Pre-Commercial use
- **Time to Market** : 1-3 year

### **Market & Competition**

Technology can be classified as Over-the-Counter (OTC), which makes regulations easier.

**Potential Sectors**  
Pharmaceutical

**Potential Regions**  
EU



## **Interest In**

For further information please contact İYTE ATMOSFER TTO.  
(miray.karakuzu@atmosfertto.com)