

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ  
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ  
КАФЕДРА ІНОЗЕМНИХ МОВ  
ЛІНГВІСТИЧНИЙ НАВЧАЛЬНО-МЕТОДИЧНИЙ ЦЕНТР**

**МАТЕРІАЛИ  
VIII МІЖВУЗІВСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ  
КОНФЕРЕНЦІЇ  
ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО ЦЕНТРУ  
КАФЕДРИ ІНОЗЕМНИХ МОВ**

**“TO LIVE IN A SAFER WORLD”**

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## SMART BIOMASK

A. O. Zahrebelna – Sumy State University, group LS – 301  
O. A. Plygun – E L Adviser

According to the research of the University of Texas at Arlington, people who suffered burns of the face could have their facial skin regrown by wearing intelligent biomechanical masks. Scientists at UT Arlington in cooperation with the US Army and Northwestern University have a great aim. This invention is going to help suffered people to live comfortably in the modern world.

Under conventional treatment, damaged tissue is removed and then special grafts are replaced on the burned place of the skin. But there are some flaws of such a procedure – it can often cause speech problems, scarring and other skin deformities. Besides, all the accompanying problems may require multiple operations.

This modern biomask consists of several layers each with the specialized function. The first one is the gel that lies against the skin. The second is a flexible layer which covers the previous. The flexible layer includes actuators and sensors. These actuators and sensors are made for keeping the layers of polymer pushed up against the skin to promote, speed up and advance healing. On the top of the second flexible layer there is a hard framework, which holds the layers lying under, in order to retain the desired shape.

The structure of the new mask is very complex. Inside all of the layers, a web of microfluidic channels and microvalves creates sub-atmospheric pressure on the burned face. The presence of vacuum promotes and speeds up the skin healing.

Special sensors inside the healing mask can help physicians to control general condition of facial tissue. It helps doctors to regulate and check the activity of biomask effects, while the process of treatment is going on.

Scientists and inventors hope that this mask will be able to noticeably improve the skin grafts, which can lead to different problems and which are very difficult to find.