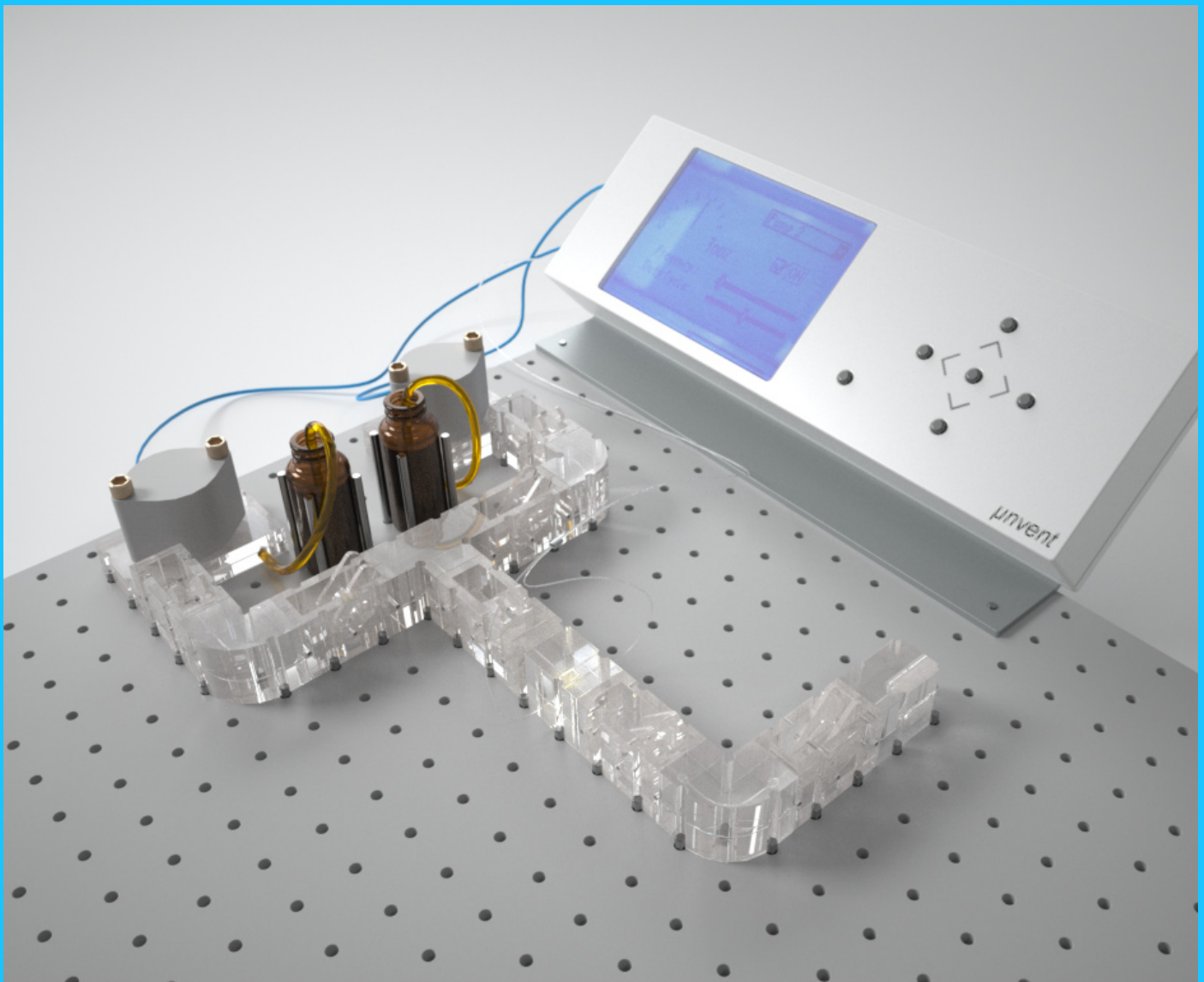


Lab-on-a-board

fast microfluidic prototyping platform
- a new generation of microfluidics.



INTRODUCTION

Lab-on-a-board is a new tool allowing to develop and establish microfluidic platforms in a fast and simple way without the need of individual device fabrication or technical assembly skills.

Brick components of different functionality connected on a

baseplate supersede iteration steps by virtue of its re-configuration capability.

A fluidic circuit can be established in a short amount of time; it can be tested and changed instantly, if required. Test set-ups can be reconfigured or exchanged without

spending valuable time on creating glued connections or unhandy screw fittings.

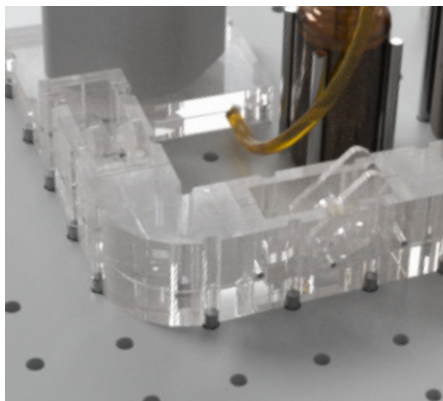
Functional blocks can be customer specific designed and developed. Microfluidics goes plug-and-play, focusing on the experiment itself and not on its set-up.

Lab-on-a-board

- a universal platform for countless applications.

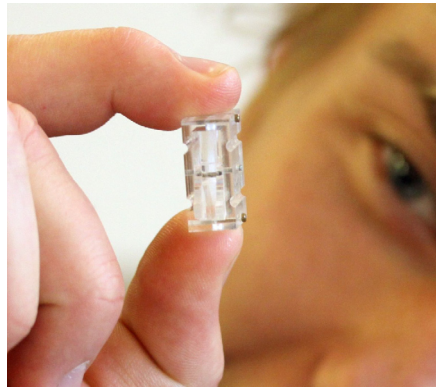
Flexibility

The patent pending self sealing mechanism allows easy connection of individual, reusable components by simply placing them onto a baseplate.



Functionality

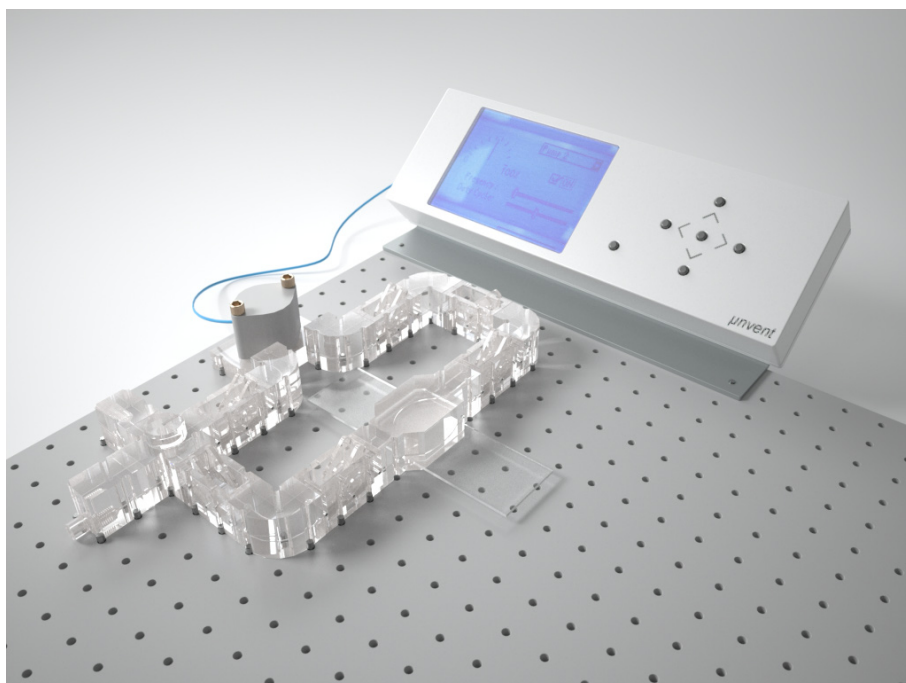
Lab-on-a-board stands for decreased development time for highly integrated devices. Various experiments can be conducted in a flexible way substituting expensive and/or specialized laboratory equipment.



Form Factor

A setup used, e.g., for chemical analyses (see cover) can be converted to a cell culture (see below) or a DNA analysis assembly (next page) within a moment.

The Lab-on-a-board concept allows researchers and developers to focus on their experiments rather than on time-consuming fabrication and assembly procedures. Microfluidics can finally be used in scientific areas that do not have access to miniaturized devices.



Microfluidics

Microfluidics is known as the manipulation of small fluid volumes used for chemical reactions, analyses or biological processes in small scale devices, for example in life science applications such as cancer diagnostics or drug development.

Reduction of the sample volume increases sensitivity and reaction speed while costs are decreased drastically. The development of these devices is time-consuming and requires often several iterations and design changes before a working device is obtained.

The trend of microfluidics therefore goes more and more to hybrid systems since highly integrated devices are difficult to realize due to their complexity. This means that only a limited functionality is integrated in a microchip.

Additional functions are realized by conventional or miniaturized external components that are connected to the microfluidic component using tubes. In general, the miniaturization of fluidic devices often poses a challenge with respect to handling and interconnections owing to the small dimensions and the extremely low volume of fluids.

The platform allows combination of different functional units for a variety of applications, e.g. DNA analysis:

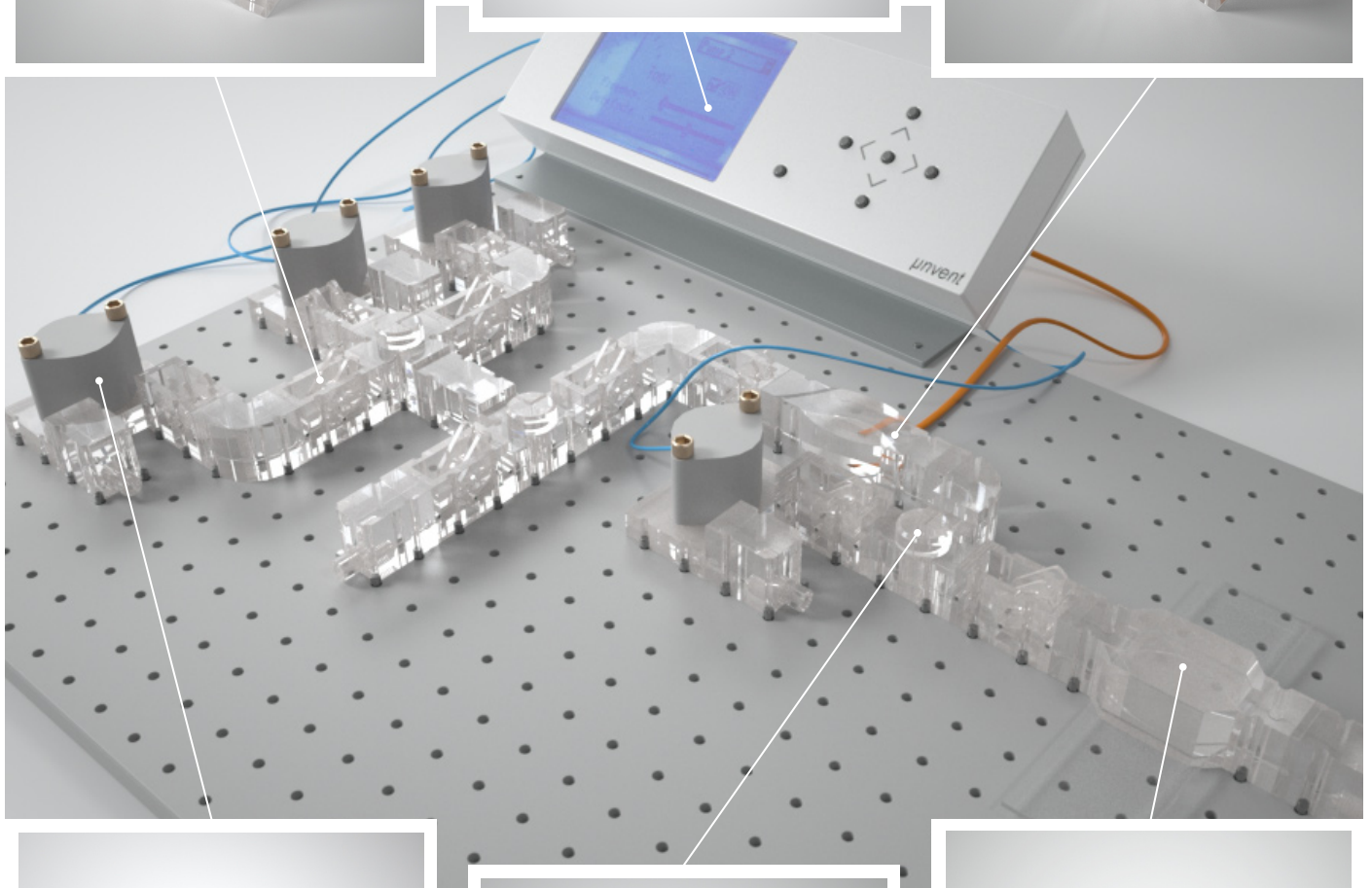
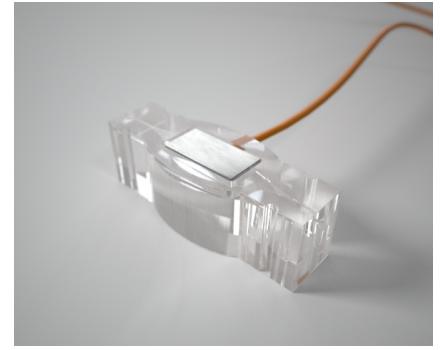
The patent pending sealing mechanism establishes a quick and reliable fluidic interconnection.



A control unit allows a real stand-alone drive of the setup.



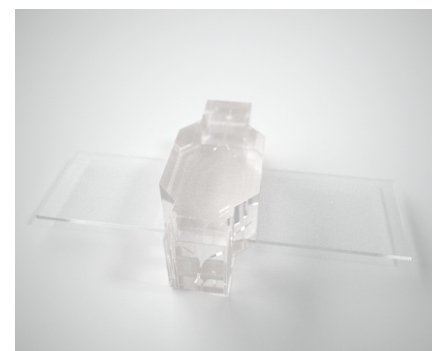
Temperature controlled components for cell culture or PCR.



Economic micropumps deliver flow rates for various applications.



Microvales offer precise control of multiple flows.



Cell chambers can be combined with microscopeslides for further analysis.

Lab-on-a-board

- a collaboration between DTU and IPU

The Lab-on-a-board concept was developed by Detlef Snakenborg at the Technical University of Denmark. He is working in the field of microfluidic design and polymer micro-fabrication for almost 10 years.

Detlef is involved in projects ranging from the development of micro-components to microfluidic approaches for structural protein research. Based on the collaboration with scientists that have a background in biology and other fundamental research, Detlef focuses on improving the functionality and usability of miniaturized devices to give researchers from all scientific fields access to microfluidics.

Lab-on-a-board merges the experience Detlef has and the solutions he provided for various applications.

IPU stands for highly qualified process and product development, consultancy assistance, and collaboration with experts in the fields of key engineering and communication technologies. IPU is a professional partner within product development of among others medico industry products covering concept development, design and detail construction as well as product maturation. IPU has strong expertise in prototyping and tool development for injection molded products and material science.

Since December 2008 IPU has established a cooperation with DTU Nanotech represented by Jörg Rehder. Jörg has more than 10 years of experience within product development and production of MEMS sensors and actuators as well

as MEMS packaging. In cooperation with the experts at DTU Nanotech, IPU offers consultancy assistance, optimization and development within the fields of Micro-Electro-Mechanical Systems (MEMS), Micro –and Nano-Technologies (MNT), Microfluidics and Biomedical Microsystems.

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The logo for IPU, consisting of the letters 'IPU' in a bold, green, sans-serif font.