

## TECHNOLOGY OFFER

### Innovative heater for “PCR-on-a-disc”

*Unique system has been developed for biochemical techniques and methods, where heating and precise temperature control are essential, like: polymerase chain reaction (PCR), loop-mediated amplification, cell lysis or thermoporation. The heater inherently match the "lab-on-a-disc" technology. The system is comprised of electrically conducting elements, biochemical testing apparatus and magnets. Companies engaged in biochemical testing are sought for license agreement.*

**Technology field:** biochemical analytic devices, medical and genetic engineering, laboratory equipment, polymerase chain reaction.

One of the emerging platforms in “lab-on-a-chip” technologies for medical diagnostics, biopharmacy and molecular biology is so-called “lab-on-a-disc” technology that allows for miniaturisation, portability, accuracy and cost effectiveness of performed biochemical operations. In this technology the reagents are contained on a fast rotating disc and the centrifugal force is used to move the reagents among the reaction chambers. Due to fast rotation of the system, the protocols that require heating and accurate temperature control, or even the thermal cycling (as in PCR) are difficult to implement.

**The solution:**

**With the use of inherent rotation of the “lab-on-a-disc” system and addition of magnets below the**

**rotating disc, a localized heat generation can be achieved just below the reaction chamber on a disc. In addition, the heat generation, can be maintained and controlled with a feedback between temperature sensor on a disc and electromotor that provide for rotation.**

**Advantages**

- **Very fast and energy efficient thermal cycling.**
- **Simple and robust: uses inherent properties of the platform and requires little additional hardware**
- **It requires no expensive or complex hardware**
- **It can be designed in small, portable, and cost effective format**
- **System can be used for different types of biochemical tests and procedures**
- **Adjustability of the system parts (system variations)**

Innovative heating system is shown in Figure 1. The electrically conducting elements are located on a plate under the "lab-on-a-disc" and with the assistance of a motor, "lab-on-a-disc" is rotated relative to one or more magnets, while simultaneously electrical current is induced in the electrically conducting element. Through latter part, the biochemical testing apparatus is heated.

The temperature is controlled and maintained by (1) rotational frequency or by (2) adjusting the distance between the "lab-on-a-disc" and plate with the magnets. System with this heater can maintain a present temperature with accuracy and speed and as a consequence, system solves both challenges of similar devices.

## STAGE OF DEVELOPMENT

Technology is ready to be licensed out.

## TARGET SECTORS

Producers of biochemical analytic devices, more specifically "lab-on-a-disc" systems, are sought for license agreement.

## INTELLECTUAL PROPERTY

Patent pending.

## CONTACT DETAILS

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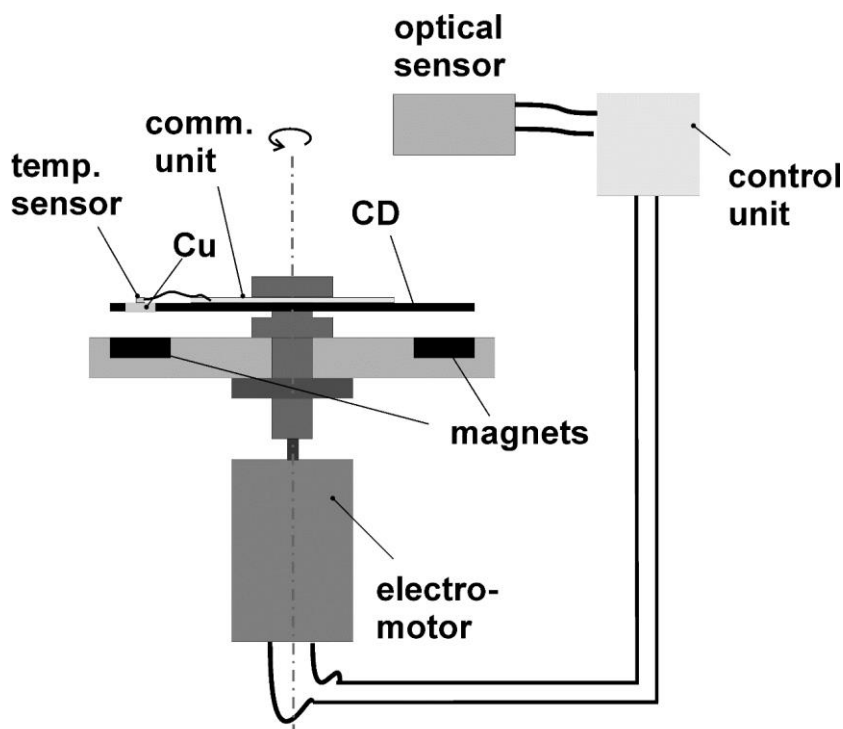


Figure 1: Cross-sectional schematic view of a heater for "lab-on-a-disc"