

## Technology Offer

Reference Number  
TO 02-0090

### Reusable Patch-Array for Multiple Affinity Enrichment of Bio-Target Molecules

#### The Challenge

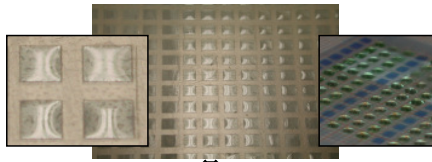
The array/chip-technology has revolutionized R&D in life science. The majority of arrays and biochips is made of glass and therefore can only be used once since the required silicon bonds are sensitive to hydrolysis. Furthermore, common arrays and biochips are limited to qualitative and comparative quantitative analysis of target molecules contained in biological samples.

To date, arrays can only be used in multiple affinity enrichment experiments when the array is taken into distinct pieces and target molecules are then eluted separately from the individual pieces. If not taken apart, the elution solution would go off on the array resulting in mixing of eluted target molecules. Automation of the process (separation of glass array and subsequent separate elution) would be – if technically possible at all - rather expensive and time consuming.

#### The Technology

The present invention overcomes these limitations and opens a new door in array technology. It discloses the provision of a plastic even surface functionalised in a structured manner and suitable for automated parallel *in situ* synthesis or immobilisation of a variety of capturing molecules. The plastic surface is structured in hydrophilic areas separated by hydrophobic barriers. By

means of a respective grid, the hydrophilic areas can be further fitted with functional groups for immobilisation or linking of capturing molecules. This allows for the capturing molecules then being used for automated simultaneous affinity enrichment and isolation of biological target molecules out of complex samples.



Novel carrier for multiple parallel synthesis and biological screening. Source: GBF

#### Commercial Opportunity

The invention has a tremendous market potential. The world market for micro arrays is estimated to reach € 3 billion in 2004. Competitive advantages of the inventive patch array compared to arrays already available on the market are obvious.

The key advantages are:

- Multiple applications of patch array depending on the type of capturing molecules loaded
- Perfect for automated simultaneous affinity enrichment experiments
- Reusability
- Cost-efficiency
- Enabling quantitative analysis and subsequent direct further use of the different eluates
- Also suitable for miniaturized parallel cell culture

#### Patent situation

German patent application, dated September 2003. International patent applications will follow.

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