

Preview: PAL Heatex Stirrer



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**PAL Heatex Stirrer -
New Mixing and Heating
Technology for Sample
Preparation and SPME**



PAL Heatex Stirrer - New Mixing and Heating Technology for Sample Preparation and SPME

The efficient mixing of reagents is required for many operations in the laboratory, like sample homogenization, the dissolving of solids or liquid/liquid extraction. For the efficient head-space analysis of liquid samples a rapid exchange between the liquid and the gas phase (headspace) is required. Often magnetic stirrers are applied to achieve mixing. However, especially at higher speeds stir bars tend to loose contact to the magnet and stop turning. This problem is aggravated when solids are added to the sample liquid which is common practice, e.g. the addition of salts to the liquid to shift the equilibrium. Furthermore stir bars make auto-sampling cumbersome since a bar has to be added to every sample vial manually. Vortex mixers offer effective stirring, but cannot be used for SPME sampling.

The powerful PAL Heatex Stirrer mixes samples rapidly applying cycloid shaped mixing pattern without the need for stir bars. For SPME headspace and immersion sampling the special design (pat. pending) ensures that the delicate fiber is not damaged (see fig. 3).

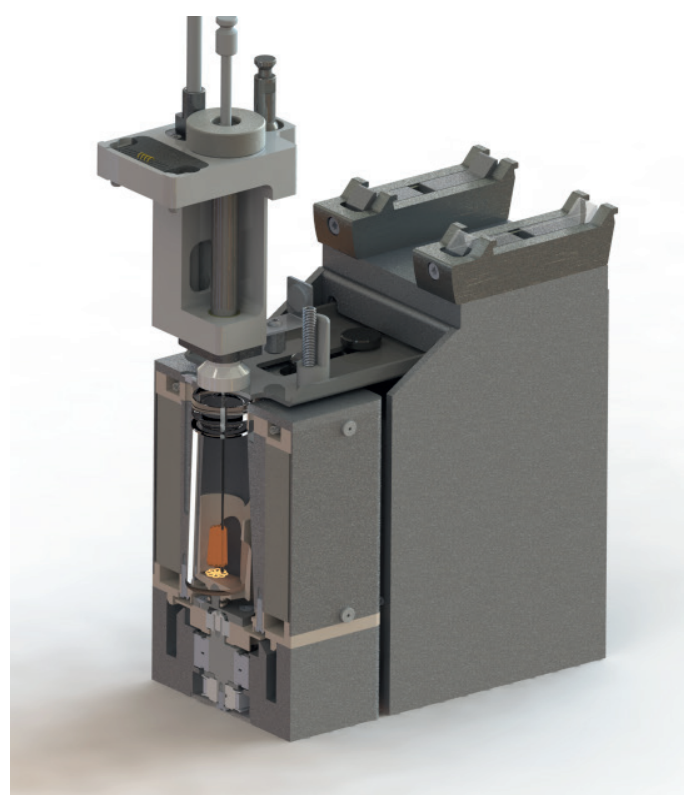


Figure 1: Cutaway view of the Heatex Stirrer Module with SPME tool.

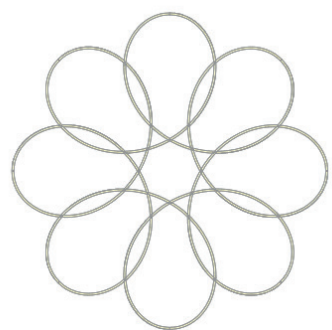


Figure 2: Flower power for stirring: cycloidal mixing patterns.

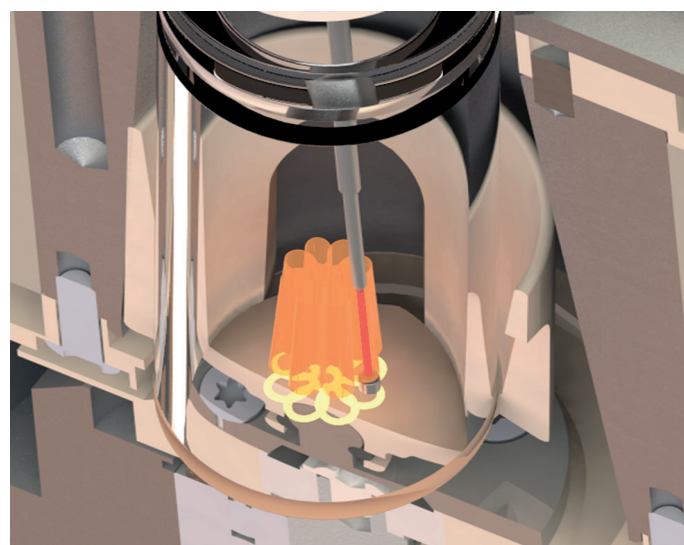


Figure 3: Motion of a liquid (orange) when applying a cycloidal mixing pattern (yellow). The entire volume of the liquid is mixed efficiently. The integrity of the SPME fiber (red) is not compromised.

The PAL Heatex Stirrer offers:

- Rapid equilibration through effective stirring for head-space and immersion SPME sampling while ensuring the integrity of the fiber
- Efficient dissolution of solids, temperature controlled
- Liquid/liquid extraction
- Stirring/heating for derivatization reactions
- No stir bar required, constant stirring also with samples containing solids
- Precise control of the equilibration temperature 40-150 °C
- Software controlled, temperature and stirring speed are logged
- Compact size

The PAL Heatex Stirrer: Performance and unsurpassed handling

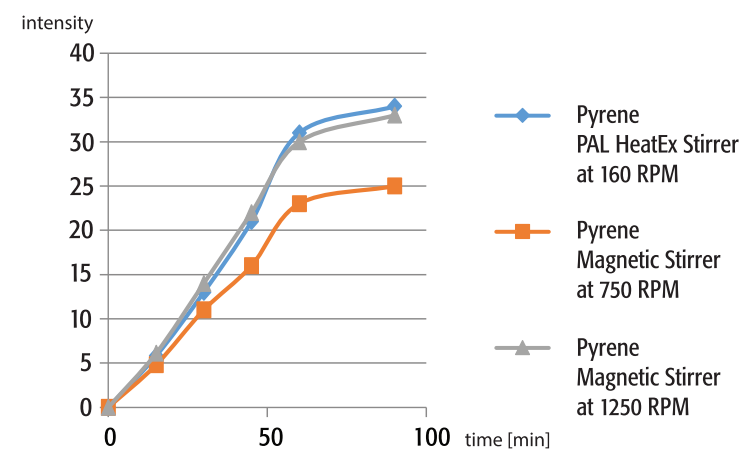


Diagram 1: Immersion SPME saturation curves of pyrene in water. The Heatex Stirrer at 160 rpm (blue curve) is as efficient as the magnetic stirrer at 1250 rpm.

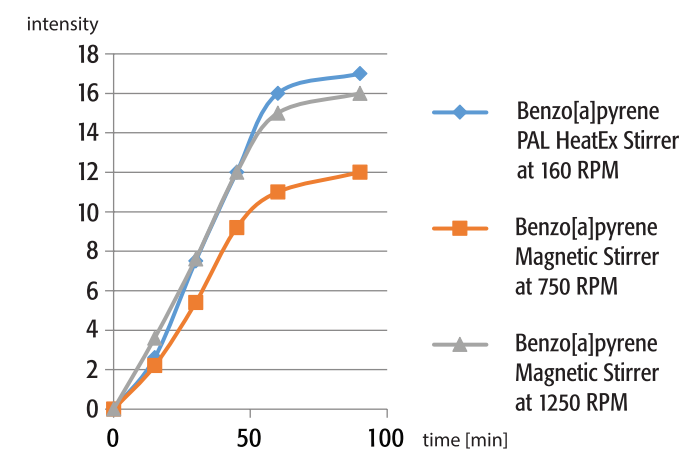


Diagram 2: Immersion SPME saturation curves of benzo[a]pyrene in water. The Heatex Stirrer at 160 rpm (blue curve) is as efficient as the magnetic stirrer at 1250 rpm.

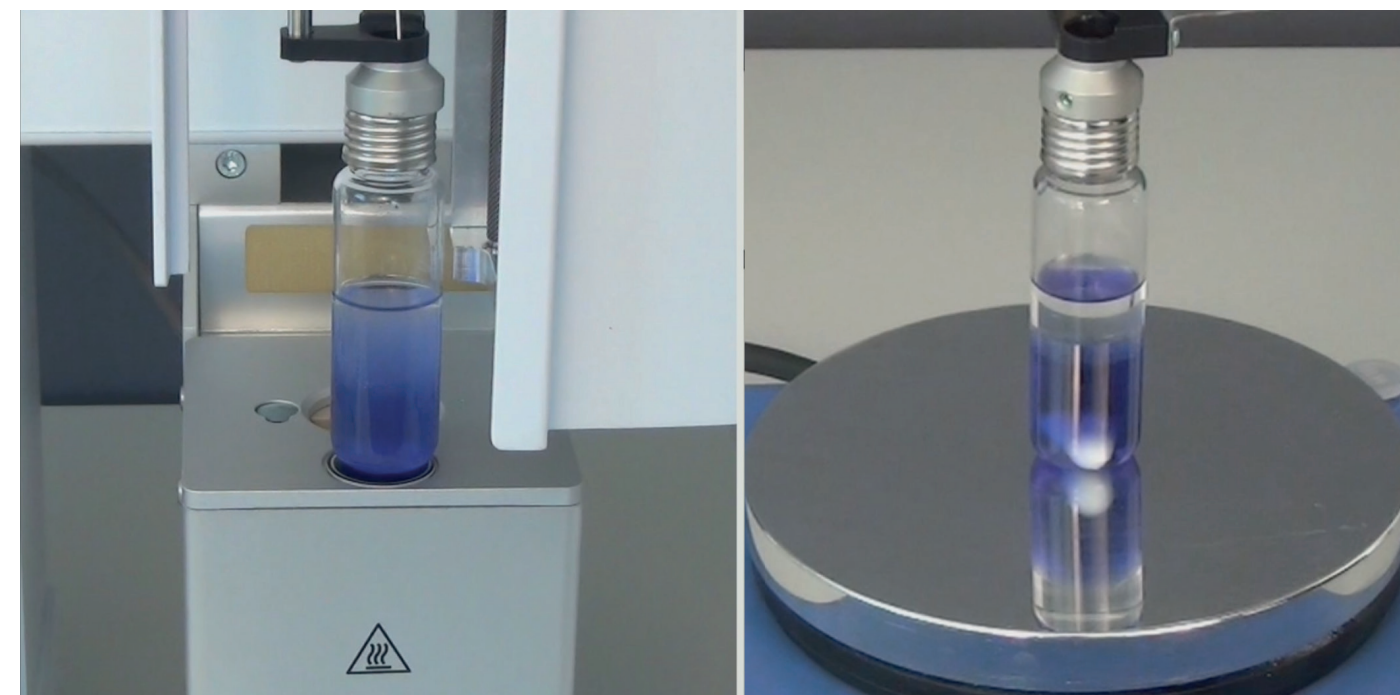


Figure 4: The PAL Heatex Stirrer (left) gives superior results for liquid/liquid extractions, i.e. smaller droplets and hence more intense exchange between organic and aqueous layer when compared to liquid/liquid extraction with a magnetic stirrer at 1000 rpm (right).

With better performance at lower stirring speeds compared to conventional magnetic stirrers, the PAL Heatex Stirrer offers full integration into the PAL3 System. There is no need for magnetic stir bars or heating bathes making automated stirring of samples easy and convenient.

Specifications of the PAL Heatex Stirrer Module

- Temperature Range 40 - 150 °C
- Stirring Speed 0 - 160 rpm (0-1370 cycloidal loops)
- Dimensions (L x W x H) 190 mm x 85 mm x 160 mm

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CTC Analytics AG
Industriestrasse 20
CH-4222 Zwingen
Switzerland
T +41 61 765 81 00
F +41 61 765 81 99
Contact: info@ctc.ch