PRODUCTION OF BIOSOURCED FOAMS BY MICROCHANNELS AT HIGH THROUGHPUT

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In recent years, the use of microchannels has emerged as an interesting alternative to produce emulsions and foams with uniform and controlled size distribution of bubbles and droplets [1]. A previous study [2] has shown the potential of microchannels in terms of research and development as well as industrial applications.

During that study, differences in the foam structure were found between the moment of foam formation and the final product. The changes of geometry throughout the process before obtaining the final product are thought to be at the origin of this foam structure evolution.

Therefore, the aim of this study was to evaluate the effect that geometrically modified microchannels may have on foam structure. Similarly, the effect of the liquid base viscosity as well as the liquid flowrate used are evaluated. Significant differences have been found for these factors and their interactions.

Figure 1. shows the results at two liquid flowrates for the elastic module (G') when using two microchannel configurations (CX600 and CX-E600) and a liquid base at two different viscosities (WPI3XG02 and WPI3XG04). Foams with different degrees of stiffness have been found leading to the conclusion that microchannel configuration have an impact on foam structure.

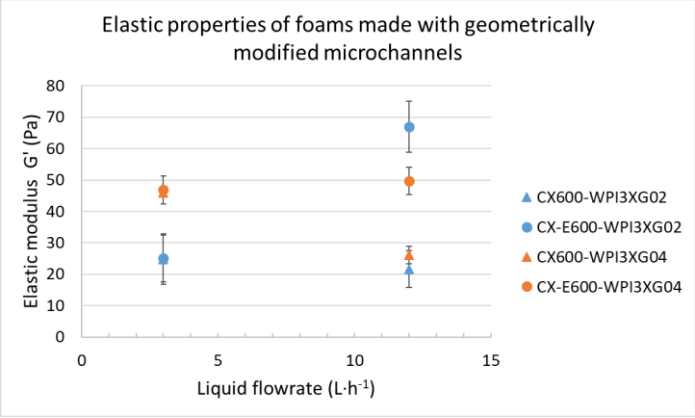

Figure 1. Rheological response of foams produced using two different microchannel configurations and a liquid base at two viscosities.

References

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