

Development of a microfluidic circuit “microreactor” to Atmospheric Analyses

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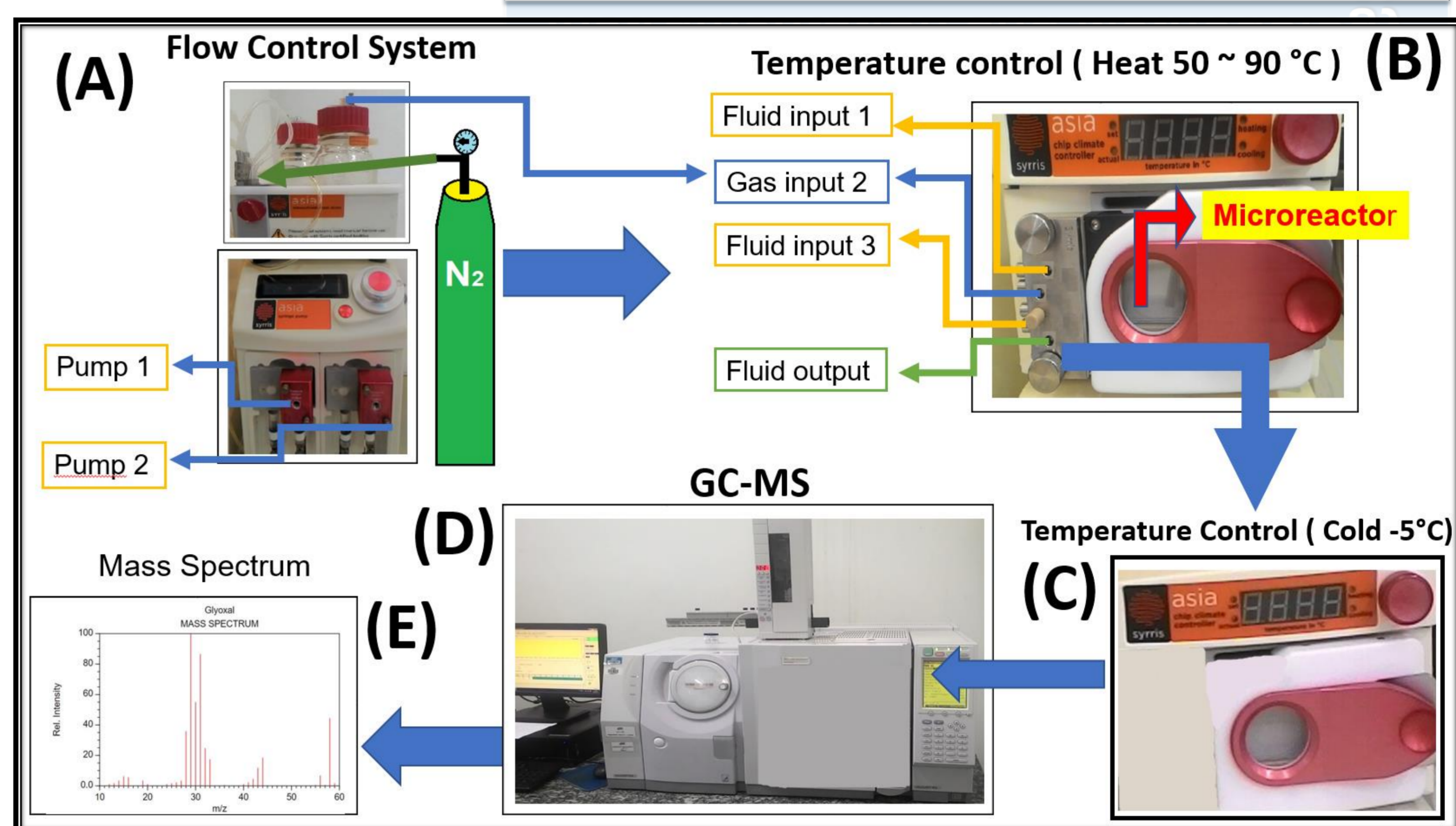
Introduction

The growing production of goods and services, as well as, the large volume of vehicles in urban areas have generated an impact on the atmosphere. These contaminations bring several problems to human health, regarding inflammations of the respiratory tract and the increase of the cases of diseases related to these types of problems (Braga et al., 2011). One factor that influences the air quality is the formation of photochemical smog in the tropospheric layer. The Glyoxal (GLY) and Methylglyoxal (MGLY) have recently attracted attention to several types of studies, as they are a major contributor to the formation of Secondary Organic Aerosol and a major precursor to the formation of tropospheric ozone at a global level, due to photolysis and photo-oxidation processes that (Zarzana et al., 2017). This research aims to study and develop a microfluidic circuit (micro-reactor) for detection and quantification of GLY and MGLY in laboratorial scale.

Instrumentation and Methodology

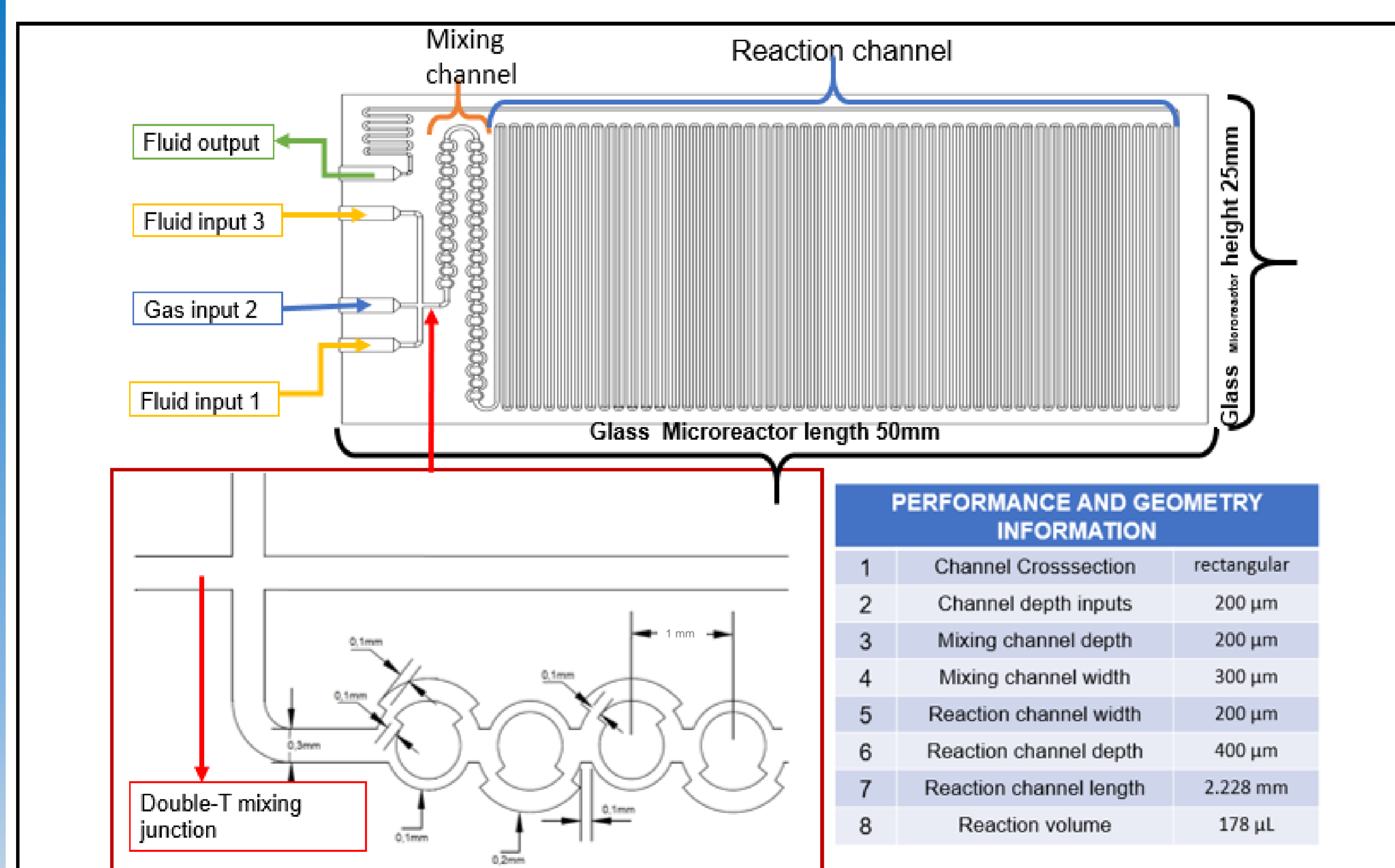


New Femtosecond laser workstation applied in the process of microreactor fabrication

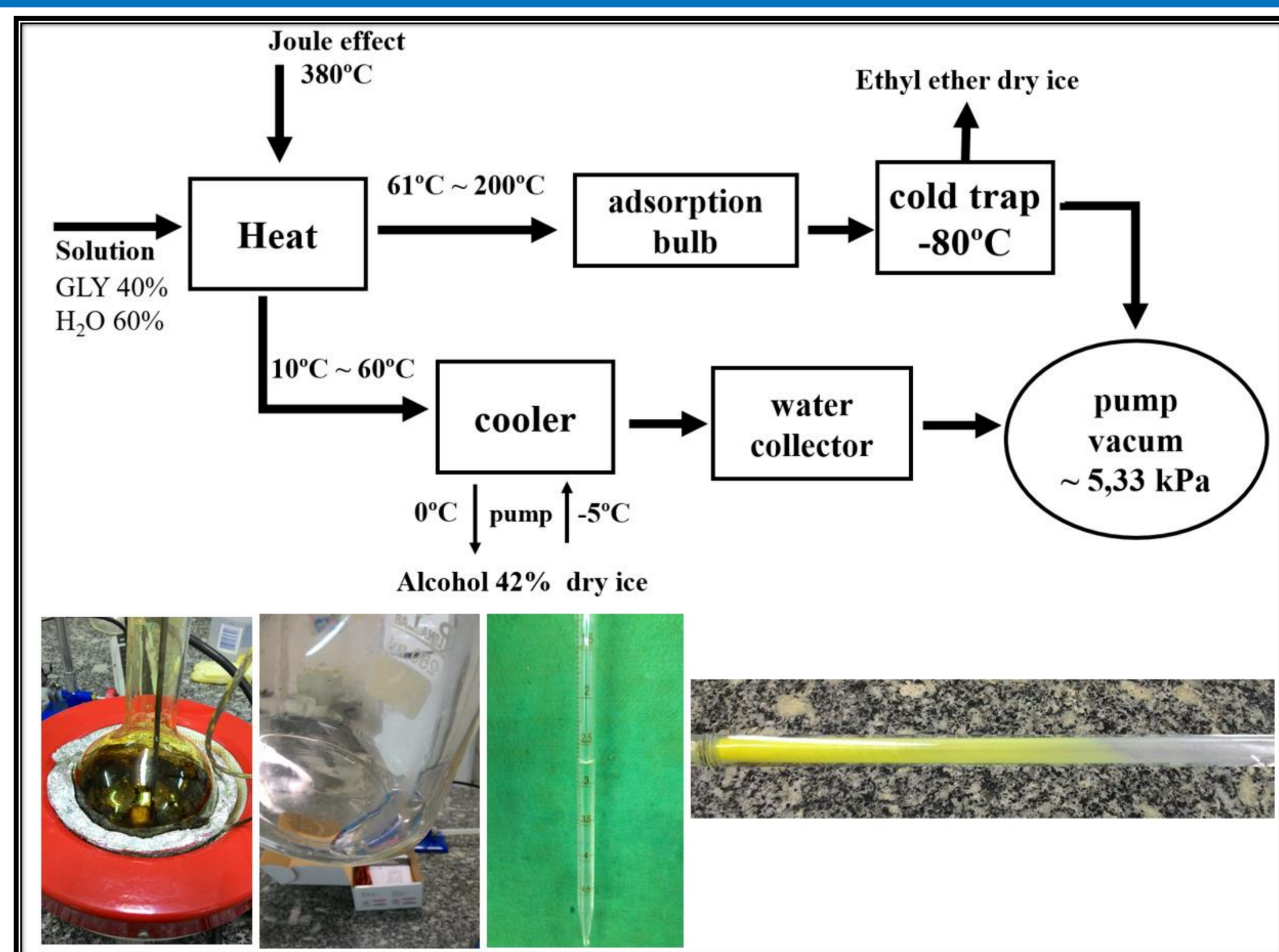


Syrris Assia System

First results



Design of P-ASAR microreactor and its characteristics



GLY and MGLY proposal flowchart and result sample

Conclusion

The proposed methodology, until this moment, has generated satisfactory results, which propitiates our evolution in this research field, and consequently in the future the realization of the following points:

- Performing the derivatization reaction;
- Performing the comparison between the proposed microreactor and commercial one;
- Validation of parameters and measurement of GLY and MGLY in situ;

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