Exploring the Selective Generation of Arsenic Hydrides in Quaternary Ammonium Salt Suspension: A Didactic and Systematic Qualitative Approach Applied to Wastewater Treatment
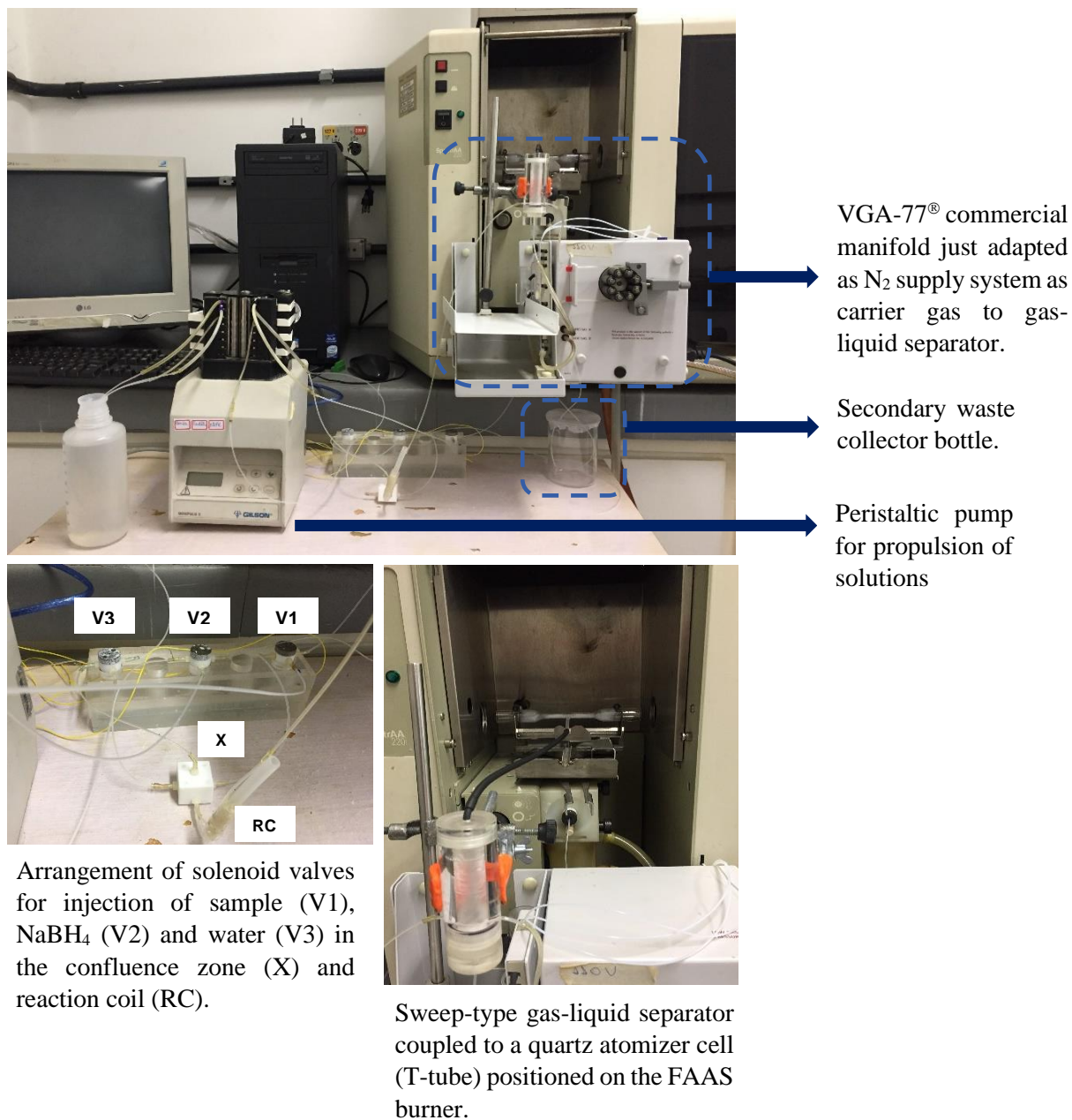
Bruno Elias dos Santos Costa* ● [a]**, Luciano Alves da Silva ●** [a]**, and Nívia Maria Melo Coelho ●** [a]

[a] Institute of Chemistry, Federal University of Uberlândia (UFU), Av. João Naves de Ávila 2121, CEP 38400-902, Uberlândia, Minas Gerais, Brazil.
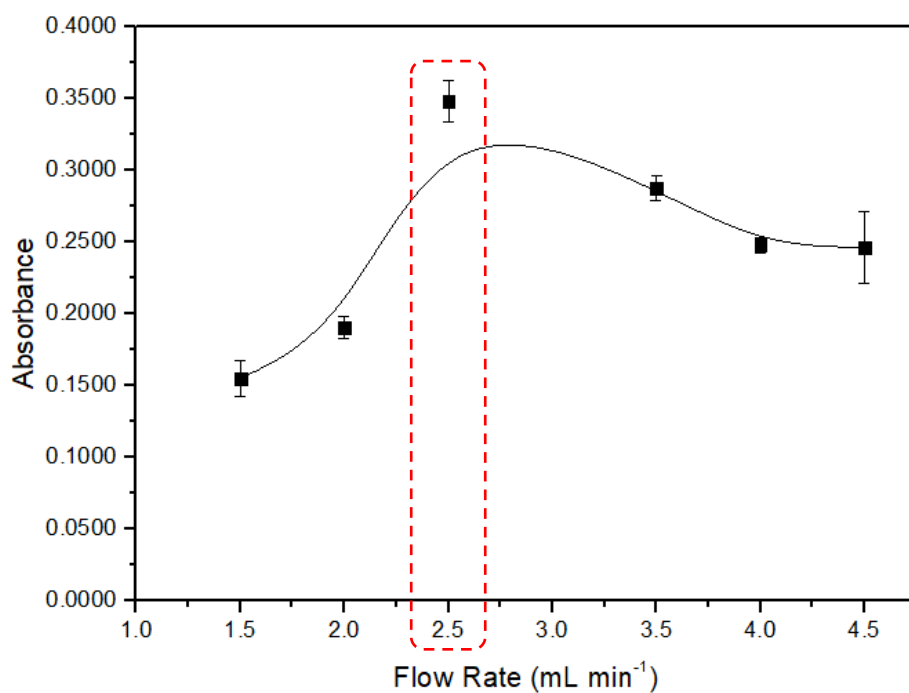*brunoeliassantos@yahoo.com.br

Supplementary Material

Details of the instrumental apparatus and determination of the optimal conditions of the HG AAS flow system

VGA-77® commercial manifold just adapted as N_2 supply system as carrier gas to gas-liquid separator.

Secondary waste collector bottle.

Peristaltic pump for propulsion of solutions

Arrangement of solenoid valves for injection of sample (V1), $NaBH_4$ (V2) and water (V3) in the confluence zone (X) and reaction coil (RC).

Sweep-type gas-liquid separator coupled to a quartz atomizer cell (T-tube) positioned on the FAAS burner.
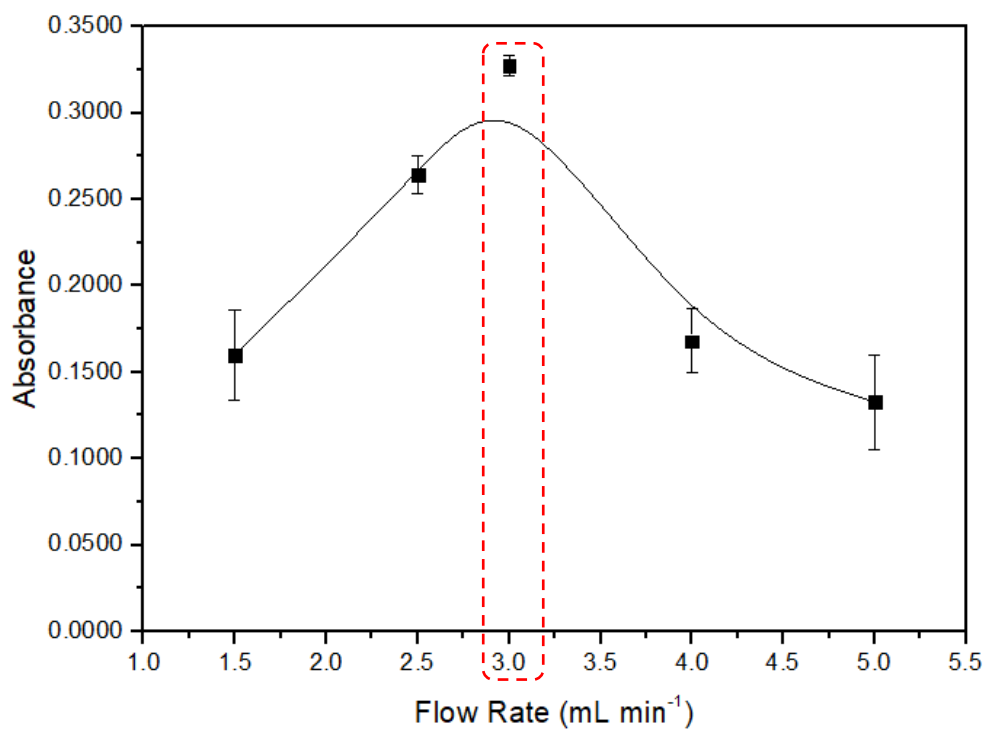
Figure S1. Real illustration of the HG AAS system schematic depicted in Figure 1. (Source: The authors)
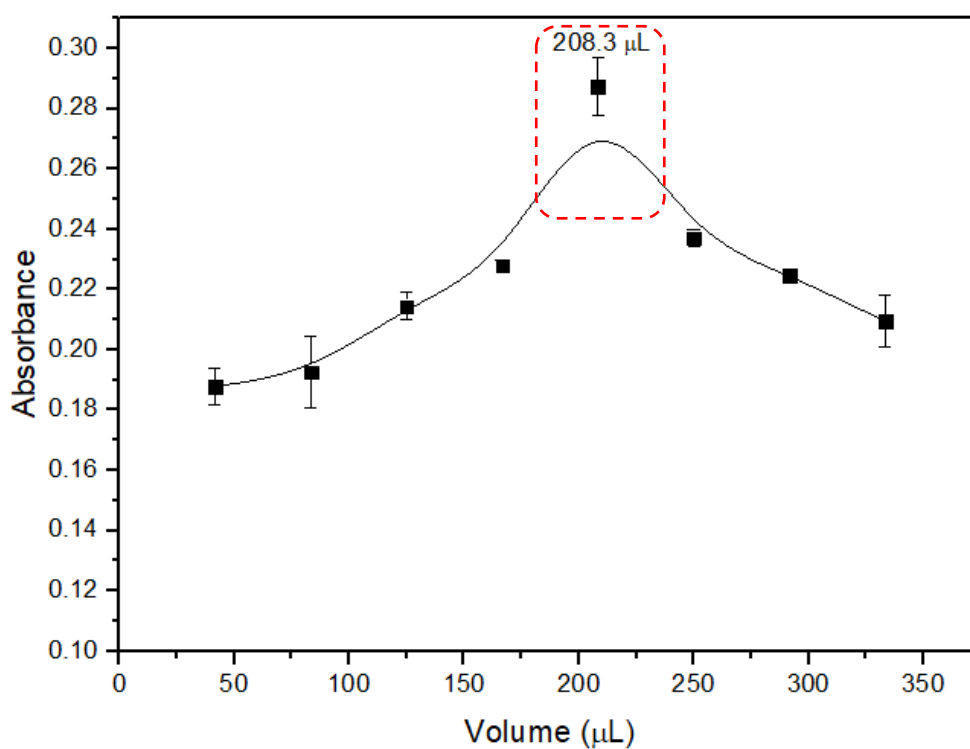
Figure S2. Effect of the variation in the flow rates of sample and $NaBH_4$ solutions. The highlighted value represents the selected condition.
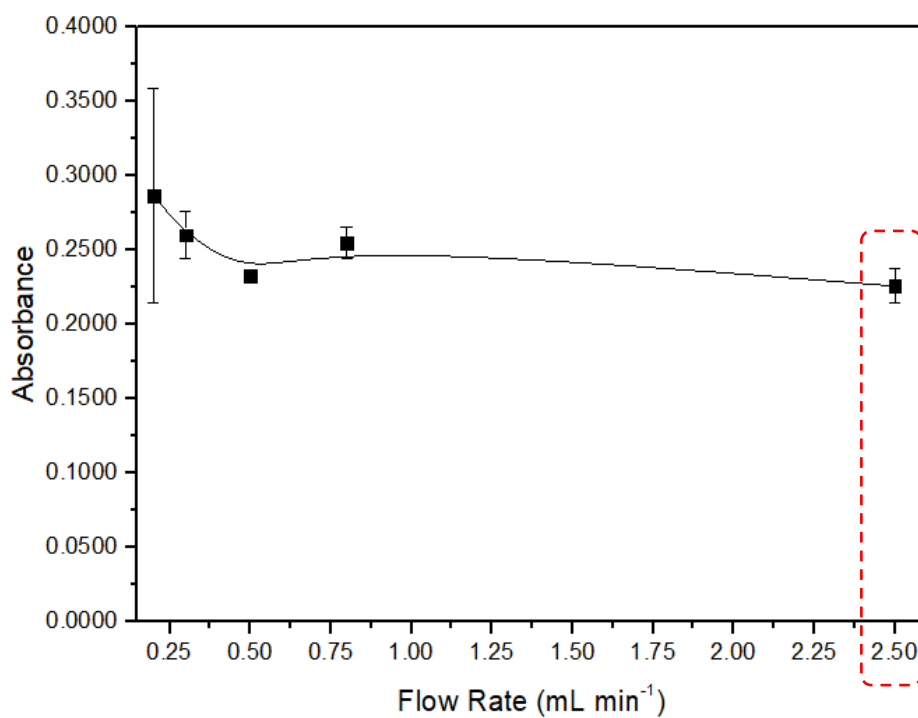
Figure S3. Effect of the variation of water flow as a carrier. The highlighted value represents the selected condition.

Figure S4. Effect of the variation of drainage flow (gas-liquid separator outlet channel). The highlighted value represents the selected condition.

Figure S5. Effect of the variation of sample and NaBH$_4$ injected volumes. The highlighted value represents the selected condition (corresponding to the activation time of valves V1 and

V2 of 5.0 s). The relationship between injected volume and valve activation time is given by the factor of 41.67 µL s^{-1}.
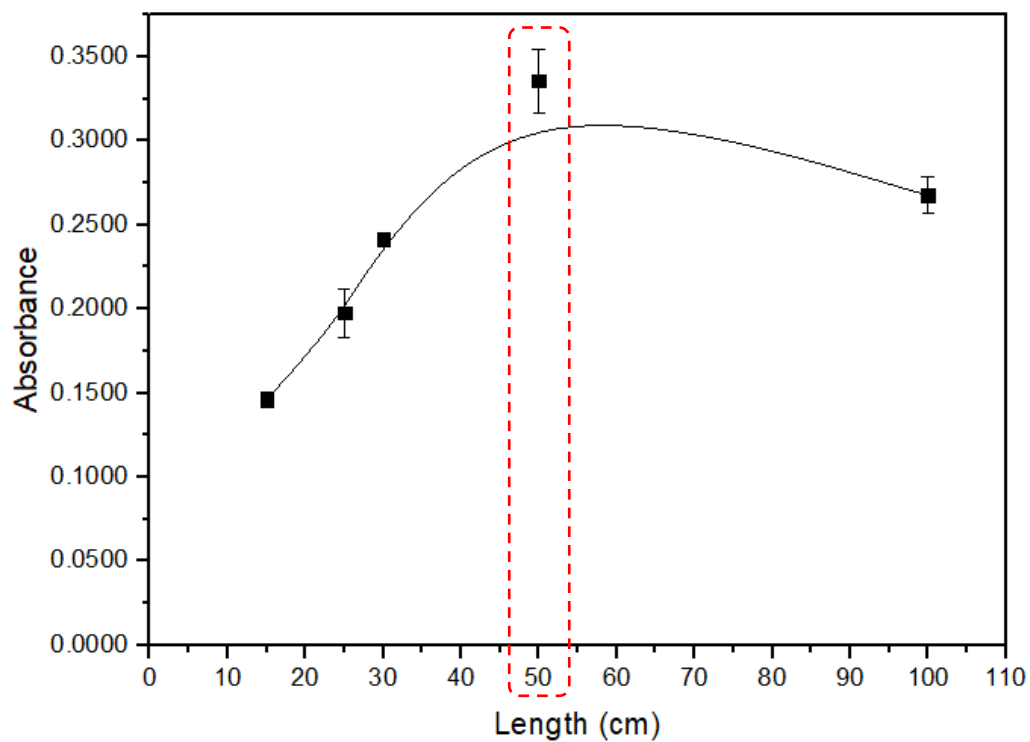
Figure S6. Effect of variation in the length of the reaction coil. The highlighted value represents the selected condition.