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Using the 3D printer as a tool for storing, packaging and developing of low cost scientific devices

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Statement of the Problem: The Heritage of Science and Technology consists of instruments and devices, produced and used in scientific research and technological development activities, since they are essential to the process of generating and constructing knowledge. Their presence can be observed in different spaces such as laboratories, universities and research centers. Additionally, they can also be found in museums, science centers and even in private collections reflecting the history and growth of different fields of knowledge. Beyond the functionalities they perform in everyday scientific practice, they can also be used as sources for studies in the field of History of Science and Technology, as complementary educational practices, in research and scientific dissemination activities, for preservation of scientific memory, among multiple other uses. **Methodology & Theoretical Orientation:** A customized case for the protection of a reference electrode Ag/AgCl was developed and modeled according to the steps of Figure 1 using TinkerCad software for design and Slic3r for slicing and conversion into G-code format. The protection and packaging casing was printed with polylactic acid filament - PLA. **Findings:** 3D printing has been used for the development of new scientific devices, as identified by Silva et al (2021) in an article on electrochemical cells, in the creation of replicas and models of instruments for exhibition in museums, teaching and research, and in the creation of customized casings for safekeeping and storage of sensitive instruments, as shown in Figure 2. **Conclusion & Significance:** The use of 3D printing guarantees the preservation and creation of scientific instruments and devices by producing complex shapes with precision and customization according to the dimensions and characteristics of each object, preventing potential risks of damage and degradation that compromise its integrity and usability.



Figure 1. Flowchart of the main stages of the 3D printing process. (Source: Silva et al., 2021)

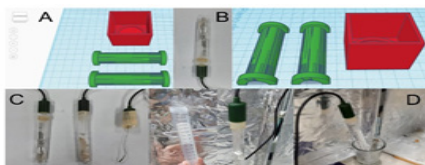


Figure 2. Casing model for a reference electrode protection (A) TinkerCad design (B) Reference electrode in good conditions (C) Damage caused by poor storage (D) Previous improvised storage.

Biography

Currently a Master's student in the preservation of science and technology collections at the Museum of Astronomy and Related Sciences (MAST) and in the preservation of cultural heritage by the National Historical and Artistic Heritage Institute (IPHAN). Graduated in Archival Science by the Fluminense Federal University (2018). Expert in digital preservation, personal archives and heritage conservation. Also works in product development, training and consulting in 3D printing.

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