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## University outreach, non-formal education and science literacy in challenging contexts

V. Fenouli<sup>1</sup>, C. Rojas<sup>2</sup>, F. Gonzalez<sup>1</sup>, S. Valiero<sup>2</sup>, C. Yañez<sup>2</sup>, I. Núñez<sup>2</sup>, I. Galain<sup>2</sup>, M. Mombrú<sup>2</sup>,  
R. Keuchkerian<sup>2</sup>, I. Aguiar<sup>2</sup>, L. Suescun<sup>2</sup>, N. Alvarez<sup>2</sup>

<sup>1</sup>ECE-DGES Unidad 14 Instituto Nacional de Rehabilitación, Piedra de los Indios, Colonia, Uruguay, <sup>2</sup>Facultad de Química,  
Universidad de la República, Montevideo, Uruguay  
nalvarez@fq.edu.uy

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Learning structural chemistry should not be something reserved for secondary and/or higher education, or a certain gender or geographical region. Non formal environments and active learning approaches help in bringing closer these ideas at different levels. 2023 marks the ten-year anniversary of Uruguay's Crystal Growing Competition which has been changing and adapting to the different scenarios we were faced with for the last decade. From personally participating in workshops to a 100 % online edition and nowadays reaching students deprived of liberty. Regardless of the circumstances the competition focuses on giving a platform for teachers countrywide for a project-based learning opportunity to use in class. The main goal of the structural chemists behind the organization of the competition is to encourage the interest in science and research through crystallography, while training the participants in the application of the scientific method and critical thinking, stimulating teamwork as well as knowledge and experience exchanges in nonstructured environments.

Teachers in different educational levels can use the process of growing crystals as a project on itself or applied to different fields of study. For instance, one of the 2022 edition winners were art students exploring science. The project would normally take within 4 to 8 weeks to grow a crystal garden or single crystal, main goals in the contest. During the pandemic the competition turned into a series of virtual proposals from finding crystals at home to some more elaborated like constructing a simple crystal structure (NaCl). The activities were to be carried out at home and had kids and adults equally involved in the process.

During the last decade we had two successful experiences with students from the National Rehabilitation Units that encourage us to follow this path further. During 2022, two groups in lock up environments won prizes in the competition. Results were broadcasted on a science local TV show and participants were able to share their experiences not only with their group but with a wider audience. Since coming to the program was not possible, due to their circumstances, an award ceremony was performed within the Rehabilitation Unit with families and friends of the participants present.

This kind of initiatives are not only rewarding for all people involved but demonstrate that science can reach the most unexpected places and motivate. With this in mind, for the near future, we have decided to focus efforts on reaching rural areas and deprived of liberty students.

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