Uno sguardo alla letteratura internazionale

Qualche idea per le attività pratiche

Journal of Chemical Education, dicembre 2021
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Challenges Encountered and Students' Reactions to Practices Utilized in a General Chemistry Laboratory Course During the COVID-19 Pandemic

Elmer-Rico, E. Mojica and Rita K. Upmacis

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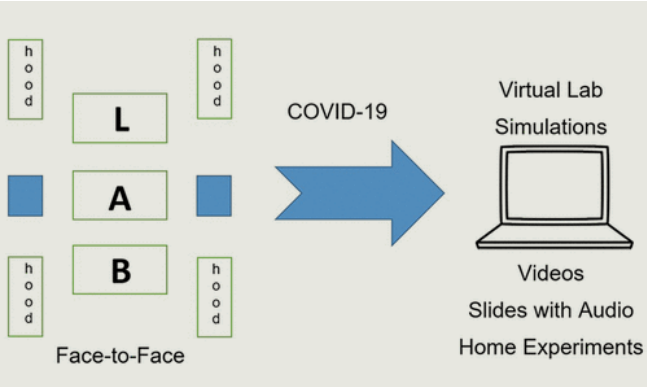
ABSTRACT The unforeseen COVID-19 pandemic forced educational institutions to shift to a remote or distance-learning mode. As a result, classes were offered online, and this shift in teaching modality presented great challenges, especially in teaching laboratory courses. While several options are available, we evaluated the use of (i) videos of lab demonstrations, (ii) Microsoft PowerPoint slides with voice-over recordings that were prepared to guide students further in the particular procedure of the experiment, and (iii) kitchen-based experiments that students could perform at home for our General Chemistry I laboratory course that was offered in an asynchronous modality during the Summer session. The students were surveyed for feedback, comments, and reactions to the use of these different practices. On the basis of student comments, it was found that the videos were beneficial to illustrate important aspects of each experiment, with some students commenting that it made them feel as if they were actually performing the experiments themselves. The kitchen-based experiments, on the other hand, allowed students to experience performing hands-on experiments and helped them observe and relate to concepts (such as classifying matter, making physical measurements, employing units and significant figures, preparing solutions, calculating moles and molarity, and employing separation techniques) that were discussed in the lecture portion of the course.



Link: https://pubs.acs.org/doi/10.1021/acs.jchemed.1c00838

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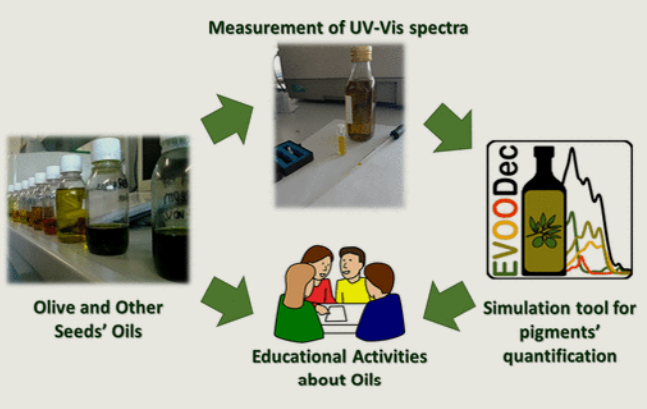
Digital Tool for the Analysis of UV–Vis Spectra of Olive Oils and Educational Activities with High School and Undergraduate Students

Sandro Jurinovich and Valentina Domenici

ABSTRACT UV–vis absorption spectroscopy is one of the most accessible spectroscopic techniques at the high school educational level, and it is usually introduced in analytical chemistry courses due to its high versatility and to the wide range of applications in many fields of chemistry. Within this framework, we have developed an easy-to-use "simulation tool" to identify and quantify the main pigments in a relatively complex food matrix, such as olive oil and seeds' oils. This digital software, freely available, can be used by high school students and first-year undergraduate students to analyze the UV–vis absorption spectrum of olive oils recorded in the bulk without any chemical treatment. In this paper, we



are reporting the basic principles of the spectroscopic method and the way to use the "simulation tool" with several examples and explanations that are useful for students and teachers. In the second part of the paper, several examples of activities about the chemistry of olive oil, realized with the fifth classes' students of a high school technical institute (K–12 level) and undergraduate students of an introductory course in spectroscopy in the second year of the Chemistry Degree Course, are reported. These activities were performed partially face-to-face and partially in distance learning mode during the COVID-19 pandemic. The main learning outcomes, methodological issues, and students' feedback resulting from these experiences are reported and commented on, showing the potential of the simulation tool for educational purposes.

Link: https://pubs.acs.org/doi/10.1021/acs.jchemed.1c01015
L'ultima versione del software usato nell'articolo è scaricabile al link: https://github.com/sandroj87/EVOODec/releases/tag/1.2

Laboratorio proprio per tutti

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Nobody Can See Atoms: Science Camps Highlighting Approaches for Making Chemistry Accessible to Blind and Visually Impaired Students

Henry B. Wedler, Lee Boyes, Rebecca L. Davis, Dan Flynn, Annaliese Franz, Christian S. Hamann, Jason G. Harrison, Michael W. Lodewyk, Kristin A. Milinkevich, Jared T. Shaw, Dean J. Tantill†, and Selina C. Wang

ABSTRACT Curricula for three chemistry camp experiences for blind and visually impaired (BVI) individuals that incorporated single- and multiday activities and experiments accessible to BVI students are described. Feedback on the camps from students, mentors, and instructors indicates that these events allowed BVI students, who in many cases have been discouraged from doing science, to understand that

chemistry can be made accessible and that they can think about chemistry on a level comparable to their sighted peers.

Link: https://pubs.acs.org/doi/10.1021/ed300600p

Per saperne di più

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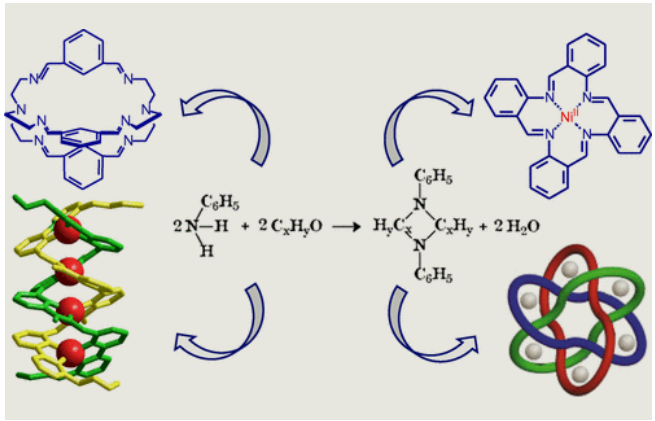
J. Org. Chem. 2020, 85, 19, 12212–12226

Beauty in Chemistry: Making Artistic Molecules with Schiff Bases

Luigi Fabbrizzi

ABSTRACT In 1864, Hugo Schiff, aged 30, discovered the reaction of aromatic aldehydes with primary amines to give imine derivatives. A C⊠N imine bond presents the unique properties of being strong, as



expected for a covalent double bond, and of being reversible due to a fast hydrolytic process. In view of such features, Schiff base condensations are thermodynamically controlled, which, in the case of reactions involving multifunctional aldehydes and primary amines, allow the formation of complex and sophisticated structures through a trial-and-error mechanism. Back hydrolysis can be prevented by hydrogenating C⍁N bonds under mild conditions. In such a way, stable rings and cages of varying sizes can be synthesized. Moreover, transition and post-transition metal ions, establishing coordinative interactions with imine nitrogen atoms, can address Schiff base condensations of even more complex molecular systems, whose structure is controlled by the geometrical preferences of the metal. Metal template Schiff base condensations have produced multinuclear metal complexes exhibiting the shape of tetrahedral containers, of double helices, and, supreme wonder, of the Borromean rings. These molecular objects cannot be compared to the masterpieces of painting and sculpture of the macroscopic world, but they instill in the viewer aesthetical pleasure and admiration for their creators.

Link: https://pubs.acs.org/doi/10.1021/acs.joc.0c01420

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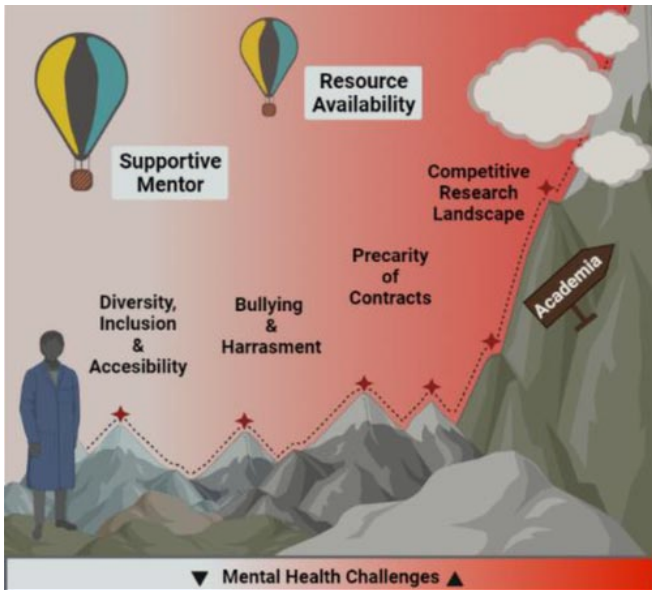
The Impact of Research Culture on Mental Health & Diversity in STEM

Juanita C. Limas,Linda C. Corcoran,Alexander N. Baker,Ana E. Cartaya,Dr. Zoë J. Ayres

ABSTRACT The onset of COVID-19, coupled with the finer lens placed on systemic racial disparities within our society, has resulted in increased discussions around mental health. Despite this, mental health struggles in research are still often viewed as individual weaknesses and not the result of a larger dysfunctional research culture. Mental health interventions in the science, technology, engineering, and mathematics (STEM) academic community often focus on what individuals can do to improve their mental health instead of focusing on improving the research environment. In this paper, we present four aspects of research that may heavily impact mental health based on our experiences as research scientists: bullying and harassment; precarity of contracts; diversity, inclusion, and accessibility; and the competitive research landscape. Based on these aspects, we propose systemic changes that institutions must adopt to ensure their research culture is supportive and allows everyone to thrive.



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