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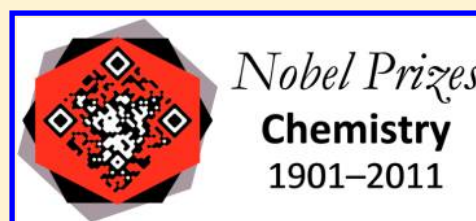
Offering QR-Code Access to Information on Nobel Prizes in Chemistry, 1901–2011

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S Supporting Information

ABSTRACT: The Nobel Prize is the most prestigious prize in the world. With the use of online free available tools, a poster was constructed with QR-coded information about the Nobel Prizes in chemistry from 1901 to 2011. The QR-NPchem poster can be explored as a mobile-learning tool, using a smart phone, to introduce the Nobel Prizes in Chemistry in the classroom.



KEYWORDS: Elementary/Middle School Science, High School/Introductory Chemistry, First-Year Undergraduate/General, History/Philosophy, Inquiry-Based/Discovery Learning, Internet/Web-Based Learning

Instructors are finding that the smart phone is a powerful tool in the classroom¹ and expect that it will change the way of teaching. Additionally, QR codes are becoming increasingly popular in marketing and science education.^{2–5} Taking advantage of QR codes and the excellent resources available on the Nobel Prize Web site,⁶ a poster containing chronological QR-coded information about the winners of the Nobel Prize in Chemistry (QR-coded NPchem) was developed. Because the mobile-learning environment clearly benefits the learning process by introducing science and other subjects with a fun and exciting platform, these tools are attractive resources to instructors.

■ NOBEL PRIZE IN CHEMISTRY: FACTS AND FIGURES

The Nobel Prize is the most prestigious prize in the world. Since 1901 the Nobel Prize has been awarded every year for achievements in chemistry, physics, medicine, literature, peace, and economic sciences (after 1968). The Nobel Prize was created by the third and last will of Alfred Nobel (1895), which gave much of his wealth to the establishment of the prize (today approximately 255 million USD). Alfred Nobel's main achievements were the invention of dynamite (a nitroglycerine-based explosive) and the detonator. He held 355 patents, mainly related with the market of explosives technology. Because of special reasons (e.g., World War I and II), the chemistry prize was not awarded on eight occasions: in 1916, 1917, 1919, 1924, 1933, 1940, 1941, and 1942.

In the period from 1901 to 2011 the Nobel Prize in Chemistry (NPchem) was awarded to 160 scientists (161 prizes since Frederick Sanger was awarded twice, in 1958 and in 1980), with only 4 (2.5%) prizes awarded to women. The women scientists awarded with a NPchem were Marie-Curie (1911, also Nobel Prize in physics in 1903), her daughter Irène Joliot-Curie (1935), Dorothy Hodgkin (1964), and Ada Yonath

(2009). Adolf Hitler forbade two German laureates from receiving the NPchem, Richard Kuhn in 1938 and Adolf Butenandt in 1939. They received the Nobel Prize diploma and medal later, but not the prize amount (currently the prize value is 1.2 million USD).

Organic chemistry (44 prizes, 27.3%) and biochemistry (43 prizes, 26.7%) are the most awarded fields of research, followed by physical chemistry (30 prizes, 18.6%) and inorganic and nuclear chemistry (18 prizes, 11.2%).

■ QR-CODES AND NOBEL PRIZES: A DECODING GAME

The QR-coded NPchem poster (see the Supporting Information) can be introduced in the classroom to familiarize students with the Nobel Prize in Chemistry winners and their accomplishments in a hands-on manner. The NPchem poster contains QR codes associated with the respective laureate, which direct to their page or video interview. The main fields of research follow a color scheme that is associated with the scientist (organic chemistry, green; biochemistry, blue; physical chemistry, orange; inorganic and nuclear chemistry, pink) (see Figure 1).

After a brief introduction about Alfred Nobel and his legacy, students can be invited to test their knowledge by taking the Alfred Nobel quiz in the QR-coded NPchem poster (Figure 2).

The QR-coded NPchem poster allows the students to explore it either individually or in a group. In the classroom, the instructor can use a large printed QR-coded NPchem poster or print a selection of individual QR codes and distribute them as exploring cards. The video interviews are especially useful for homework assignments. The subject can be accompanied with interactive games (chirality, conductive polymers, plastics, the

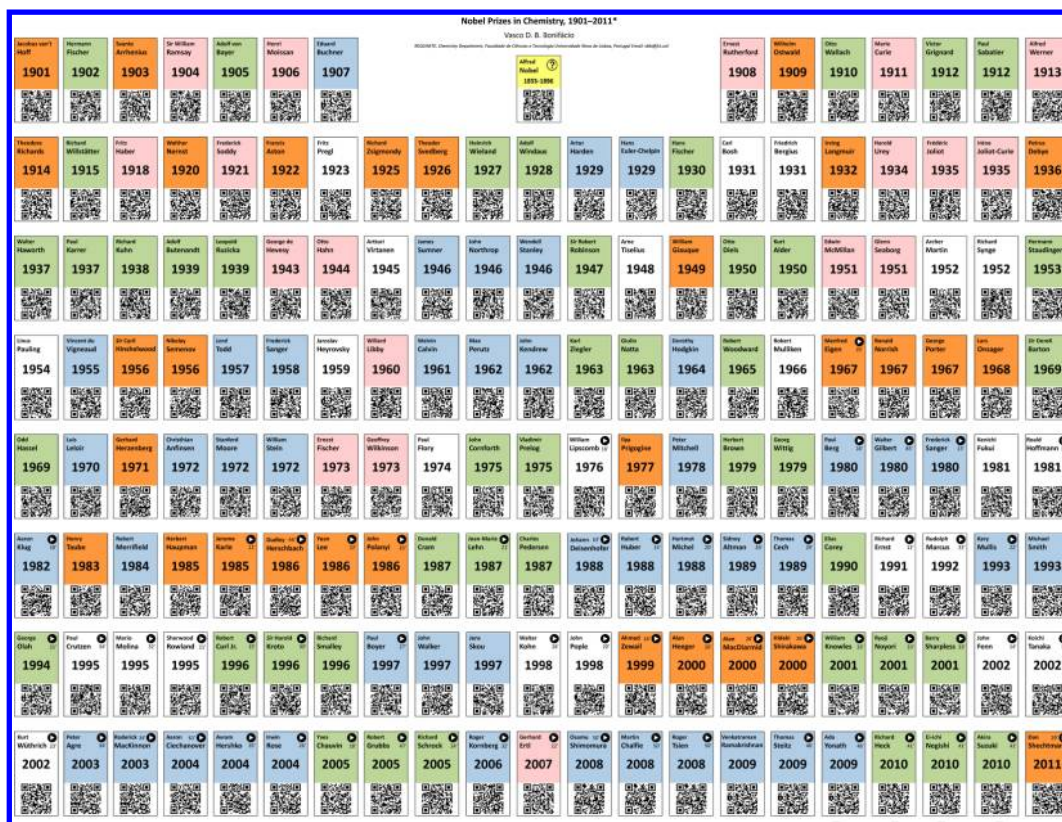


Figure 1. The QR-coded NPchem poster.

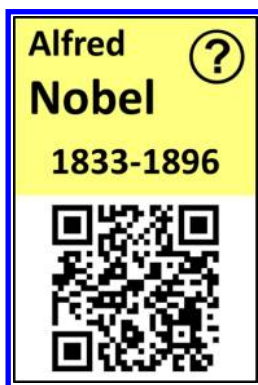


Figure 2. Alfred Nobel quiz taken from the QR-coded NPchem poster.

PCR method) that can be found in the Nobel e-Museum Web site.⁶

SUMMARY

A QR-coded Nobel Prizes in Chemistry poster was constructed using online free available tools. The QR-NPchem poster can be explored as a mobile-learning tool, using a smart phone, to introduce the Nobel Prizes in Chemistry in the classroom.

ASSOCIATED CONTENT

Supporting Information

NPchem poster. This material is available via the Internet at <http://pubs.acs.org>.

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Notes

The authors declare no competing financial interest.

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