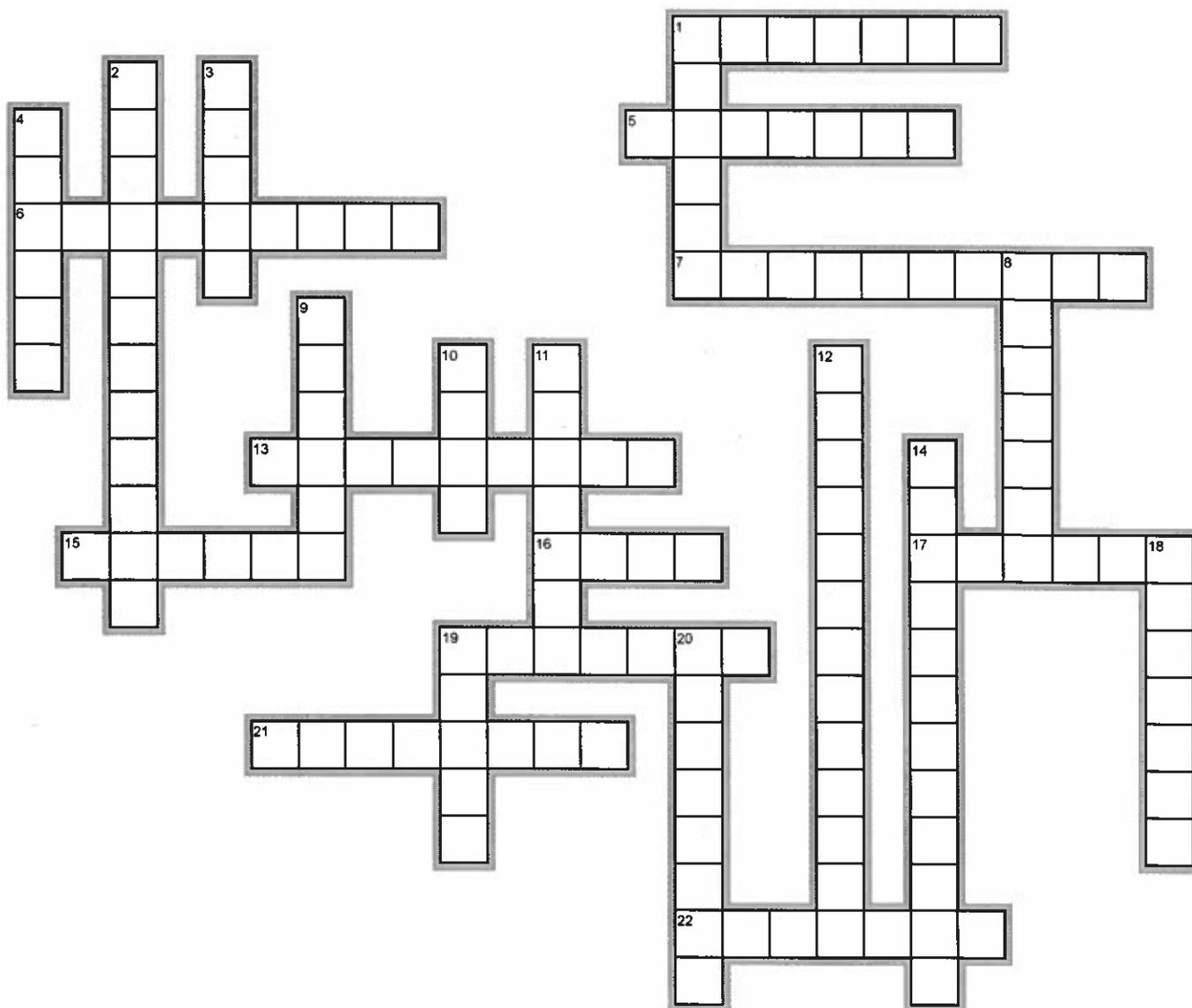


Nobel Prizes in Chemistry (and related topics); 1901-1909

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Across

1. Eduard _____ was awarded the 1907 Nobel Prize in chemistry for his work with fermentation.
5. Scientists' from the United States have been awarded seventy-nine Nobel prizes in Chemistry, the most of the any country. The United Kingdom and _____ are tied for second with 34 Prize recipients. Up to three scientists a year can receive the Prize.
6. Albert Abraham _____ won the 1907 Nobel Prize in physics. He developed the interferometer to measure the speed of light. The interferometer is the instrumental part of the FT-IR (Fourier transform-Infrared spectrometer). FT-IR is widely used in labs around the world.
7. Ernest _____ was born in New Zealand but spent most of his professional life in Canada and the United Kingdom. His work included the discovery of radon (Rn), uncovered that alpha and beta particles were different, and applied the concept of half-lives to radioactive decays.
13. Wilhelm Ostwald received the Nobel Prize in Chemistry in 1909 for his work with _____ and chemical equilibria. His work resulted in the large scale production of fertilizers and explosives. A catalyst lowers the activation energy of a reaction, allowing it to go faster.
15. A Curie (abbreviated Ci) is a unit of measuring radioactivity. It is approximately 3.7×10^{10} dps. The unit dps stands for disintegrations per ____.
16. Jacobus van't _____ won the 1901 Nobel Prize in Chemistry, in part, for advances in

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- understanding osmotic pressure. Osmotic pressure is a colligative property that involves solvents with dissolved molecular species (i.e. glucose in water) passing through a semipermeable membrane. The osmotic pressure generated is proportional to temperature and the species concentration. RO or reverse osmosis is used to purify water.
- Professor Marie Curie perfected and used isolation techniques to separate (and discover) radioactive elements such as _____.
 - Dr. Moissan uncovered silicon _____ in a meteor crater in Arizona. The mineral was named moissanite, recognizing his contribution.
 - Rutherford, while working with Neils Bohr, postulated the existence of _____, in the nucleus. This was needed to explain the results of the gold foil experiment.
 - J.J. _____ is credited with the pudding model of the atom, discoveries related to electrons and isotopes, and the invention of the mass spectrometer. He won the Nobel Prize in Physics in 1906.
 - Marie Curie was born in _____, the country for which the element Polonium was named after. Professor Curie is widely considered one of the pioneers of women in the STEM fields.
 - Rutherford's _____ foil experiment, which demonstrated the atom is mostly empty space, demonstrated that alpha particles can pass through the _____ foil.
 - _____ He was the 1902 recipient of the Nobel Prize in Chemistry. He discovered an esterification reaction, which involved the reaction between a sugar molecule and a carboxylic acid. He also developed a molecular geometric projection system, and helped understand the lock and key mechanism associated with enzymes. Emil _____ also played a role in the discovery of barbiturates.
 - The element _____, (Rf, Z=104) was named after Ernest Rutherford.
 - Dr. Eduard Buchner demonstrated that yeast cells were not required for _____. Dr. Buchner served in WW1 (rank major) and died in battle.
 - The French chemist Ferdinand _____ received the 1906 Nobel Prize for his work isolating fluorine from different molecular species.

Down

- Adolf von _____ won the 1905 Nobel Prize in chemistry while working at Munich University (Germany). He demonstrated that coal tar could be a source of organic molecules, such as dyes.
- The 1903 Nobel Prize in Chemistry was awarded to Svante Arrhenius. It laid the foundation for the understanding of strong and weak _____, and the dissociation of electrolytes in water, both salts and acids/bases. He collaborated with Wilhelm Ostwald and Jacobus Henricus van't Hoff. In 1883 he suggested that sodium chloride split into sodium ions and chloride ions in the aqueous phase, which enhanced the electrical conductivity of the water.
- _____ Prizes were first awarded in Stockholm, Sweden in 1901. Nobel Prizes are awarded in the fields of Physics, Chemistry, Medicine, Literature, Peace and Economics.
- Sir William _____ won the Nobel Prize for Chemistry in 1904 for work related to inert gases (He, Ne, Ar, Kr, Xe). He also helped establish their place on the periodic table. He is credited for the discovery of Neon, Krypton and Xenon. The same year he won the Nobel Prize (1904), two physicists won the Nobel Prize in Physics for their discovery of argon.
- Friedrich Wilhelm _____, along with van 't Hoff, Nernst, and Svante Arrhenius are credited with establishing the field of physical chemistry.
- Along with her husband (Pierre), Marie _____, (maiden name Maria Sklodowska) was awarded the Nobel Prize in Physics. In 1911 she would win the Nobel Prize in Chemistry.
- The prize is named after Alfred Nobel, from Sweden. He was the inventor of _____ and other explosives. He was a very productive inventor, having won over 350 patents.