



The Ingredients: A Guided Tour of the Elements

Philip Ball

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In *The Ingredients*, Philip Ball blends history and science as he offers an illuminating look at our centuries-long struggle to understand the nature of the physical world.

It's been a long journey from the ancient belief in four elements--earth, water, fire, air--to the hundred plus elements that occupy the modern periodic table, and Ball makes a perfect tour guide, highlighting the many points of interest on the way. He introduces us to key scientists such as Lavoisier, who named oxygen, proved that water is not an element, demolished the ancient 4-elements theory, and lost his head to the guillotine. Ball highlights the unexpected opportunities for making useful things from the riches found on the periodic table. We learn, for instance, that the seemingly useless argon (after the Greek *argos*, 'lazy'--because it did nothing) makes perfect filler for light bulbs, because no matter how hot the bulb gets, argon won't react. Likewise, silicon, a very poor conductor of electricity (hence the label semiconductor) is perfect for computer chips, because the slow movement of electrons is easier to manipulate. Ball shows us how to read the periodic table and he recounts Mendeleyev's tale of discovering the correct form to the table "in a dream." He also explains the difficulties of defining and identifying the elements, the principles behind the formation of synthetic elements, and the ways in which particular elements (gold, iron, oxygen) shaped culture and technology.

From the alchemical quest for the Philosopher's Stone to the legend of the Midas touch, *The Ingredients* provides an engaging look at the elements that make up the world we live in.

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