

THIS ISSUE

One in a Million

Due to its impact on global climate, carbon is the element that currently dominates the public debate. Why publish an issue on boron when the public is focusing on carbon? As you read the articles in this issue, what you will find is that boron is a “quintessential” terrestrial element. Although rare in the Solar System, Earth’s tectonic and weathering processes have concentrated boron within the Earth’s upper continental crust, where we are completely dependent on it for everyday life.



The authors of this issue make a compelling argument that we shouldn’t undervalue boron. As an essential constituent of nearly 300 minerals such as tourmaline and colemanite in the Earth’s crust and even one in the Earth’s mantle (qingsongite), boron provides a unique indicator for deciphering Earth’s 4.6 billion-year evolution from a molten mass in the proto Solar System to a vibrant planet that can sustain life. Boron also allows us to peer into the complex dynamics of subduction zones, to trace paleoclimatic conditions and atmospheric CO₂, and to understand how the essential building blocks of life (e.g. RNA) could form in the hostile environments of the early Earth. But, boron isn’t just valuable for scientific pursuits, it also finds practical applications in glass and ceramics, detergents, fertilizers, and nuclear reactors among others.

Boron is literally “one-in-a-million.” The rarest and purest of diamonds, such as the Hope diamond, are blue because of boron. It rarely takes more than 1 boron atom per million carbon atoms to produce that sought after blue color. Registering on average ~11 ppm in soils, boron may not be the first nutrient you think of but it is critical to many plant functions. A plant can have all the carbon, nitrogen, and phosphorus it needs, but without boron, plants can’t thrive. Without boron, there would be no such thing as a cell wall and no processes such as cell division, metabolism, or moving sugars through a plant. To put it bluntly, without boron there would be no such thing as plants.

So, before anyone dismisses boron as not deserving our attention ... think again. The articles in this issue give a fascinating glimpse into the many and varied roles played by this light but important element.

For another summary of the importance of boron, check out Ed Grew’s article published in the June 2015 issue of *Elements*. You can find it online at <http://elementsmagazine.org/2015/06/01/boron-the-crustal-element/>

2016 IMPACT FACTOR = 4.0

The Thomson Reuters “InCites™ Journal Citation Reports” for 2016 were released in June 2017. *Elements’* impact factor was 4.0 in 2016, which ranks 1st among the journals in the mineralogy category and 8th in the geochemistry/geophysics category.

Elements continues to generate significant interest and attention.

In 2016, the 455 articles published in *Elements* from 2005 to 2016 received 2,317 citations. That’s an average of 5.1 citations per article per year. Over 500 different journals cited *Elements* articles in 2016, with the most citations found in the journals *Lithos* (132), *American Mineralogist* (97), *Chemical Geology* (83), *Geochimica et Cosmochimica Acta* (61), *Ore Geology Reviews* (59), and *Environmental Science and Technology* (45). Perhaps even more interesting is the fact that these 455 *Elements* articles have been cited over 13,000 times in the last 12 years.

Unlike many other journals, each *Elements* issue is a collection of 5–7 related articles. The editors and authors work hard to have articles that don’t overlap in content but that together present a coherent picture of a topic. It’s a team effort. So, it is perhaps more important to glimpse not so much at an individual contribution but at the impact of the collective thematic whole. As of July 2017, the most highly cited issues since the time of publication are as follows:

- v3n1 – “Zircon, Tiny but Timely” (1,000 citations)
- v2n2 – “Arsenic” (567)
- v4n5 – “CO₂ Sequestration” (554)
- v1n5 – “Large Igneous Provinces” (442)
- v2n6 – “The Nuclear Fuel Cycle” (424)
- v3n5 – “The Critical Zone” (410)

These 6 issues were published between 2005 and 2008. Each continues to receive ~40–50 new citations a year. More recent issues are also being actively cited. For example, the issue “Rare Earth Elements” (v8n5) has had 364 citations over the last 6 years; “Ophiolites” (v10n2) has had 238 citations over the last 3 years. In fact, approximately one third of the 71 *Elements* issues to date have had over 200 citations each.

What do all these numbers mean? We can say that *Elements* issues continue to be used and cited well past their publication dates. *Elements*, although meant to be a magazine for general consumption, is proving that its thematic articles can compete with well-respected scientific journals. But, even more importantly, though *Elements* readers have access to excellent articles on fascinating geoscience topics, readers can also use the magazine to stay in touch with the activities of many scientific societies, see at a glance upcoming meetings and conferences, read relevant book reviews, search for job postings, learn about geoscience equipment and services, and so much more.

It is the continued commitment of the 17 participating societies that produce this magazine, the high quality of the articles themselves, the first-rate products and services advertised in our issues, and the over 16,000 members who read the magazine that are the key reasons why *Elements* continues to have such a positive impact on our scientific community.

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