
**Arkivoc, the platinum open access journal for organic chemistry,
as it approaches its 25th anniversary**

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Abstract

Arkivoc is an open access journal for organic chemistry, which since its foundation by Alan Katritzky in 2000, has been free to readers and authors. The journal has a humanitarian mission and publishes many papers written by authors in developing countries. The majority of its workforce are unpaid volunteers working part-time as scientific editors and in other roles. In 2020 it achieved the DOAJ's Seal award for best practice in open access publication.

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1. Introduction

The organic chemistry journal *Arkivoc* was founded by [Alan Katritzky](#) as an open access e-journal in 2000. Anticipating its 25th anniversary, this paper describes what makes the journal so special, identifies its stakeholders and takes the reader through some of its operations. It also highlights a few of *Arkivoc*'s recent milestones, such as its introduction of DOIs and preprints, and how it gained the DOAJ's coveted [Seal award](#) for best practice in open access publication.

The journal got off to a great start with 91 papers published in 2000, its first year. This was achieved thanks to a combination of Alan Katritzky's facility in creating a Control Board at very short notice and the thirty or so volunteers, who spent a lot of time organizing the launch. The significant contributions of [Charles Rees](#) and John Boulton deserve particular mention. Actually, including the referees, several hundred people were involved from very early on, and it really was a joint effort by many people.

The journal quickly gained popularity, and 1,029 papers were published in 67 issues, during its first five years. More recently, the number of papers hit 4,500 early in 2021. A 2006 paper by Alan Katritzky¹ explained the motivations for *Arkivoc* and described its early working practices. This paper updates the 2006 paper and recommends the journal to a new generation of organic chemists.

2. What Makes Arkivoc So Special?

The key features, which make *Arkivoc* special are that: it is free to both readers and authors, it employs a rigorous peer review system; and it offers a range of types of issue.

2.1 Free to readers and authors

Arkivoc is an open access journal for organic chemistry, which is free to both readers and authors. When Alan and Linde Katritzky founded the journal in 2000 with a charitable donation, their aim was that the journal should particularly help authors and readers outside the US and Western Europe.

Whilst attending conferences in India as a plenary speaker in the 1990s, Alan Katritzky heard first-hand about the dire problems, which Indian organic chemists had with access to journals and getting their papers published. He was also aware that these same problems were being felt in many other countries. Over several years, academic libraries had been cancelling journals because of financial problems and publishers had been responding by raising prices and the end result was negative for everybody. Organic chemistry journals were amalgamated and sometimes they ceased publication. Consequently, readers were losing access to new research. Moreover, whilst the situation was difficult in the US and Western Europe, it was much worse in developing countries. Alan Katritzky founded *Arkivoc* for humanitarian reasons. His aim was that the journal would enable organic chemists in developing countries to more easily publish their results and that all readers would have access to their papers.

Open access journals adhere to the principle that publicly funded research should be available to everybody, and that scientific research results should be widely accessible. *Arkivoc* is categorized as a platinum open access journal, because it is free to both readers and authors. This distinguishes it from gold open access journals, which are free to readers but oblige authors to pay an article processing charge. The first gold open access journal for organic chemistry was *Molecules*, which was first published in 1996. When *Arkivoc* started publication in 2000, it was the first platinum open access journal for organic chemistry.

Brainard² has identified a gradually increasing trend towards open access publication over the last three decades. Indeed, he estimated that 45% of chemical literature was open access in 2019, including both green open access documents in repositories and papers in hybrid journals. With hindsight, one can see that Alan Katritzky was a visionary when he started *Arkivoc* as a platinum open access journal in 2000.

2.2 Peer review

Papers published in *Arkivoc* go through a rigorous, two stage, peer review system. Newly received manuscripts are considered by a Primary Review Committee and those that pass this step are then subject to peer review. Members of the Primary Review Committee ensure that papers meet the journal's basic requirements, concerning: the characterization of compounds, compliance with the [Instructions to Authors](#), content pertaining to its subject coverage, and sound chemistry. Manuscripts which meet these criteria are forwarded to the referee assigners, who usually identify four referees per paper: two from amongst those suggested by the authors and two more from the [Editorial Board of Referees](#). After receiving the reports of the referees, the relevant scientific editor makes a decision about whether to accept the manuscript, reject it, or refer it back to the author. In all cases, the corresponding author is duly informed of the decision.

2.3 Types of issue

Arkivoc offers several types of issue, the most common of which have been honorary and general issues. Each honorary issue commemorates an outstanding organic chemist, with a high h factor, and they are often timed to coincide with some anniversary, such as the chemist's 65th birthday. 123 outstanding chemists have been awarded honorary issues, during the twenty-three years 2000-22. Papers for honorary issues are submitted by authors, who have been invited by a facilitator, on account of some connection to the honoree, for example, they are colleagues, former students or postdocs of the honoree. By contrast, general papers are submitted by

authors, who want *Arkivoc* to publish their work, but have not received a prior invitation. There have been 79 general issues over the period 2000-22.

There are also reviews & accounts, and regional, thematic and conference issues. The numbers of papers published in each of the four other issue types are much lower. Over the twenty-three years 2000-22, there have been twenty-one reviews & accounts, six regional issues, three thematic issues and three conferences. Many more reviews than accounts have been published. For a review, an author provides a thorough overview of research on a contemporary topic; whilst for an account, they slant the overview towards their own research and the overview may not be comprehensive. The first issue of reviews & accounts was published in 2007. Authors publishing in the reviews & accounts issues in recent years have included: Thomas Böttcher,³ Raju Chowhan,⁴ Jose Elguero,⁵ Ahmed Elwahi,⁶ Malika Ibrahim-Quali,^{7,8} Alain Krief,^{9,10} Paolo Quadrelli¹¹ and D.S. Ramakrishna.¹²

The regional and thematic issues also need to be highlighted. There have been six regional issues, comprising: Mexico (2003), Ukraine (2005), Argentina (2011), South Africa (two issues in 2020)¹³ and Australia (2022).¹⁴ The three thematic issues to date have all been on the same topic, namely hypervalent iodine chemistry (2020, 2021 and 2022),¹⁵⁻¹⁶ but thematic issues on other subjects are planned.

The ratio of honorary to general papers in *Arkivoc* has changed dramatically over the years, as shown in the figure below.

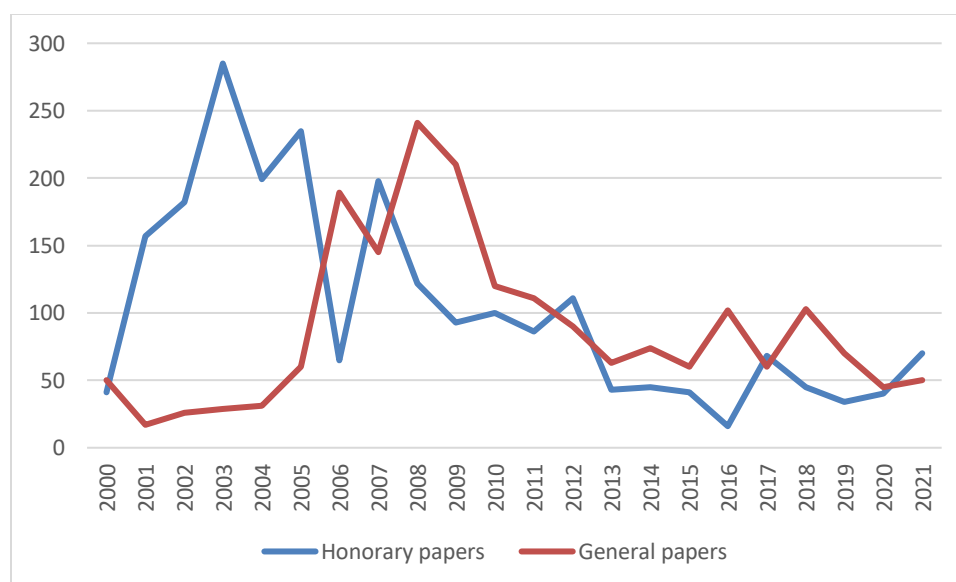


Figure 1. Honorary and general papers, 2000-2021.

During the early years there were very high numbers of honorary papers and relatively few general papers. Honorary papers peaked at 285 in 2003, oscillated wildly, and then fluctuated around 100 per year between 2008 and 2012. Then after 2012, the numbers of honorary papers dropped and total numbers were only maintained with the support of general papers. Why were there fewer honorary issues and papers from 2012 onwards? One reason was that the increase in the number of general papers led to less emphasis on recruiting honorees. Maybe as well the journal was missing the reputation and contacts of its founder Alan Katritzky (1928-2014). Looking back, it was convenient that general papers held up well, just as honorary paper numbers were declining. However, by the early 2020s, general papers themselves were in decline. The journal's response to the recent decline in general papers has been to increase the numbers of honorary and regional issues and to

start doing thematic issues. So far, these new policies are working. Honorary issues were awarded to five professors in 2021: Zbigniew Czarnocki,¹⁷ Lanny Liebeskind,¹⁸ Horst Kunz,¹⁹ Peter Jacobi,²⁰ and Philip Hodge.²¹ Then three more professors were awarded honorary issues in 2022: Girolamo Cirrincione,²² György Keglevich²³ and Sambasivarao Kotha.²⁴

3. Stakeholders

Arkivoc's stakeholders include: its authors, referees, staff, partners and readers. Each of them is very important.

3.1 Authors

Arkivoc staff continue to pursue Alan Katritzky's aim that the journal should particularly help authors outside the US and Western Europe, and the journal has been very successful in this respect. In recent years, the percentage of papers written by authors in developing country has significantly exceeded that of US and Western European authors. For example, over the years 2016-20, 57 percent of papers came from authors based in India, Eastern Europe, Russia and MENA (Middle East & North Africa). See figure 2 below.

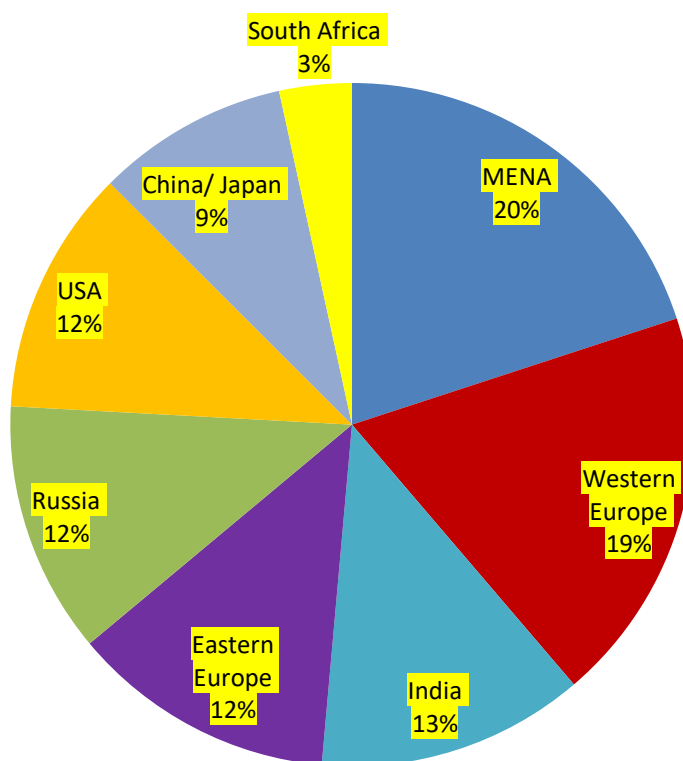


Figure 2. Authorship of papers by region/ country, 2016-20. *Source:* Web of Science. *Note:* there is some double counting here, because some papers would have had authors in multiple regions.

It is true that large numbers of papers submitted to *Arkivoc* get rejected, particularly non-invited papers. However, at each stage of the publication process, staff try to help authors to get their papers published. During

the initial screening of papers by the Primary Review Committee, papers that fall just short of the required standard are returned to their author with advice about how the paper might be improved, and in cases where a paper is rejected, feedback is provided. Similarly, the scientific editors often liaise with authors about how their papers could be improved to meet deficiencies identified by referees. Also, scientific editors may on occasions assist authors in improving the written English of their papers.

Arkivoc offers authors a favorable Creative Commons license (CC BY), by which the author retains their copyright but gives the journal the right to publish their paper. The author's copyright is acknowledged on each page of every paper (© authors), and attention is drawn to the Creative Commons license at the bottom of each *Arkivoc* paper.

3.2 Referees

Arkivoc is fortunate in having an [Editorial Board of Referees](#) with around 700 referees spread across some sixty countries. Moreover, the number of referees is increasing, as principal authors of newly published papers are invited to join and most accept. The referee assigners usually select four referees per paper: two from amongst the four suggested by the authors, and two more from the keyword database of referees. This database was carefully reviewed and updated in 2017, when all referees were contacted and asked whether they wanted to change their keywords.

Automated letters are used to facilitate communications between the scientific editors and the referees.

3.3 Volunteers and staff

Around thirty people work on *Arkivoc*, with most of them working part-time as unpaid volunteers. The largest group are the scientific editors, of whom there are around twenty. A single scientific editor is usually responsible for all the papers in a particular issue. They frequently enter into correspondence with the authors, as they discuss potential manuscript changes. Also, they sometimes assist with the written English of the papers.

In addition to the scientific editors, three other groups are involved in the publication process: coordinating editors, referee assigners and publishing staff. The coordinating editors receive the manuscripts as they are submitted and perform an initial screening process. The referee assigners select suitable referees. Some people perform multiple roles, so for example a referee assigner may also work as a scientific editor.

Whilst most people work as unpaid volunteers, there are some support staff receiving remunerations. These include the DevOps engineer and members of the publishing team. The DevOps engineer is responsible for maintaining and developing the many databases associated with the running of *Arkivoc*. The publishing team publish manuscripts in two stages. They publish the manuscript as a preprint as soon as it is accepted, and then later after requested changes have been made, they publish the final paginated paper.

3.4 Partners

As a small publisher, ARKAT USA is very appreciative of the support that it receives from its two major partners: the University of Florida Chemistry Department and the University of Florida Library. The partners' location and *Arkivoc's* base in Gainesville, Florida, reflect the fact that Alan Katritzky spent many years working at the University of Florida. *Arkivoc's* DevOps engineer is working with the University of Florida Library to create an archive of *Arkivoc* on the [Florida Online Journals](#) platform, where it will join an array of other open access journals. This work is ongoing but when completed it should greatly increase *Arkivoc's* resilience.

3.5 Conferences

ARKAT USA partners with the University of Florida Chemistry Department in organizing the *Florida Heterocyclic & Synthetic Chemistry (FloHet)* conferences. The first *FloHet* conference was held in 2000, the same year that *Arkivoc* was started. It was organized by Alan Katritzky, with the intention that any profits generated from the conference should contribute to the running costs of *Arkivoc*. This funding model worked well until the financial crisis of 2008, but afterwards there were fewer industrial delegates and the profitability was less clear cut. However, academic delegate numbers held up well and annual *FloHet* conferences continued through to 2016. From 2018 onwards, biennial conferences have been held in the new Chemistry building and members of the Chemistry Department have led the organizing committees. Nevertheless, *Arkivoc* staff are still closely involved, as they continue to participate on the committees and to provide conference speakers.

The most recent [FloHet conference](#), held 6-9 March 2022, was a great success. There were 72 lectures and over 90 poster presentations, and the conference was attended by approximately 250 professional and student organic chemists. In fact, it was heavily oversubscribed and a large number of people were advised to reapply for the next conference in 2024.

3.6 Readers

Just as the communication of scientific knowledge and ideas without financial barriers is core to *Arkivoc*'s founding principles, so readers are central to the journal's mission. In order to communicate with its readers, *Arkivoc* offers a [monthly newsletter](#), which is available online and also emailed to over 8,000 people, including referees and anyone else who signs up for it. This newsletter includes the titles, authors and graphical abstracts of the recently published papers.

In order to attract new readers and authors, *Arkivoc* is promoted at *FloHet* conferences and via social media, in particular LinkedIn, Twitter and ResearchGate. Posts about *Arkivoc* on LinkedIn have generated massive numbers of views, and posts on Twitter and ResearchGate have also been moderately successful. Looking ahead, a big promotional effort is planned for *Arkivoc*'s 25th anniversary in 2024, including a flyer and a special guest issue. This event will be an opportunity to emphasize Alan Katritzky's humanitarian aims for the journal.

It's easy for readers to search for *Arkivoc* papers. Within the journal's website, there is a powerful [Google Search](#) facility. They can also find relevant papers using any one of the three major indexing and abstracting services: *SciFinder*, *Web of Science* and *Scopus*. And there is also Google Scholar.

4. Operations

Three operations are considered in more detail: the publishing process, databases and committees.

4.1 Publishing process

There are essentially three steps in a manuscript's journey towards publication: initial screening, editorial review by scientific editors and publication. A Primary Review Committee performs an initial screening of newly received manuscripts. Some manuscripts, which fall just short of the required standard are returned to their authors with advice about how they could be improved. After the initial screening, the remaining manuscripts go to the scientific editors and the referee assigners. Guided by referees' reviews, the scientific editors then make a decision about whether to accept or reject a manuscript, or to return it to the authors requesting improvements. Thirdly, accepted manuscripts are passed to the publishing team. They give each manuscript a

DOI and speedily publish it as a preprint. Later when any outstanding changes have been made, they paginate the manuscript and publish the final version. Accepted manuscripts and final papers are clearly distinguished on the journal's website.

4.2 Databases

The running of Arkivoc requires both public facing and working databases. At the moment, *Arkivoc* has a single public facing database on the [ARKAT platform](#). However, work is in progress to create an archive of *Arkivoc* on the [Florida Online Journals](#) platform.

Publishing *Arkivoc* requires many working databases. Some of the more important ones are:

- The depository of documents
- Reports for accepted dates, manuscript publishing and manuscript processing
- Tables for volumes, issues, manuscripts, keywords and referees

These databases are written using XML markup language and mounted on a Linux server. Security is taken very seriously, so vigilance is high and there are frequent database backups. The maintenance and development of these databases are significant tasks and the DevOps engineer is paid for his work.

4.3 Committees

There are two committee meetings per year, which provide opportunities for discussions about *Arkivoc* procedures, challenges and opportunities. These two committees are the Control Board and the Steering Committee. Approximately thirty persons, including both volunteers and support staff, are invited to attend the annual Control Board meeting. This meeting is usually scheduled to coincide with a conference, so for example, the 2020 and 2022 meetings coincided with the *FloHet* conference at the University of Florida in Gainesville. Unsurprisingly, in view of worries about Covid-19 in March, many people chose to attend the 2022 Control Board meeting on Zoom.

The annual meeting of the Steering Committee is attended by around ten Control Board members with functional responsibilities. In 2020 and 2021 these meetings were held on Zoom, because of high incidences of Covid-19 and restrictions on international travel. However, the 2022 event was a face-to-face meeting, which was held in London in early October.

5. Some Recent Developments

Here are a few examples of how *Arkivoc* continues to keep pace with best publishing practices:

- DOIs were applied to all *Arkivoc* papers in the years preceding 2018, ensuring that each and every paper is retrievable in perpetuity using a permanent URL.
- Preprints were introduced in 2018, in order to expedite the publication process. Prepublication with a DOI but without pagination now occurs very soon after a manuscript has been accepted, and then the final version is published later after revisions have been completed.
- *Arkivoc* achieved the coveted [Seal award](#) for best practice in open access publication from DOAJ (Directory of Open Access Journals) in 2020. As part of the application process, the [About Arkivoc](#) webpages were extensively revised to better describe the journal's policies and practices. More than

18,000 peer reviewed, open access journals are included in DOAJ but only about 10% of them have successfully achieved the Seal award.

- An export citation option was added to all *Arkivoc* papers in 2021, enabling readers to quickly and easily export citations to their personal reference databases. The RIS format, which is offered, supports the export of references to Reference Manager and EndNote, two leading brands of reference management software.

6. What Next?

Thank you for taking the time to read this paper. If you are an organic chemist, we hope that you will consider *Arkivoc* as a suitable journal, in which to publish your papers. If you are the principal author of a paper published in *Arkivoc*, we hope that you will accept the invitation to join the [Editorial Board of Referees](#). You might also like to consider supporting *Arkivoc* by making a donation towards its running costs, which you can do from the [Make a Donation](#) page within the website.

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