An Overview of *Synlett* Spotlights after 10 Years and 300 Editions

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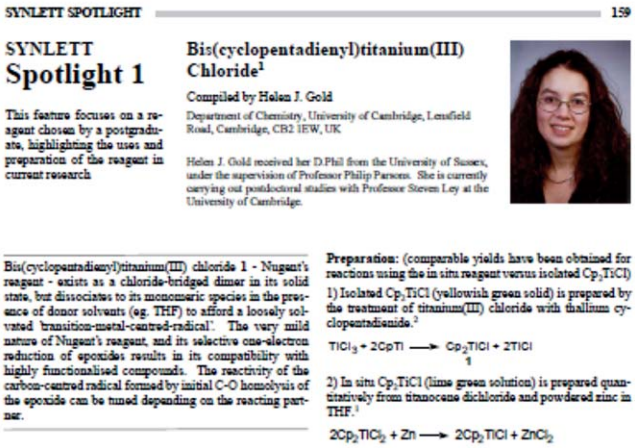
This paper is dedicated to the memory of Professor Octavio Antunes and his family.

Introduction

In 1999, the editorial board of *Synlett* introduced a new section called *Synlett* Spotlights. The Spotlight articles focus on selected reagents chosen by graduate students and emphasize their preparation and uses. The first published Spotlight concentrated on bis(cyclopentadienyl)titanium(III) chloride (Cp_2TiCl) and was compiled by Helen J. Gold from the University of Cambridge, UK (Figure 1).[1]


SYNLETT SPOTLIGHT 159

SYNLETT
Spotlight 1

This feature focuses on a reagent chosen by a postgraduate, highlighting the uses and preparation of the reagent in current research

Bis(cyclopentadienyl)titanium(III) Chloride[1]

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Helen J. Gold received her D.Phil from the University of Sussex, under the supervision of Professor Philip Parsons. She is currently carrying out postdoctoral studies with Professor Steven Ley at the University of Cambridge.

Bis(cyclopentadienyl)titanium(III) chloride 1 - Nugent's reagent - exists as a chloride-bridged dimer in its solid state, but dissociates to its monomeric species in the presence of donor solvents (eg. THF) to afford a loosely solvated 'transition-metal-centred-radical'. The very mild nature of Nugent's reagent, and its selective one-electron reduction of epoxides results in its compatibility with highly functionalised compounds. The reactivity of the carbon-centred radical formed by initial C-O homolysis of the epoxide can be tuned depending on the reacting partner.

Preparation: (comparable yields have been obtained for reactions using the in situ reagent versus isolated Cp_2TiCl)

1) Isolated Cp_2TiCl (yellowish green solid) is prepared by the treatment of titanium(III) chloride with thallium cyclopentadienide.[2]

$TiCl_3 + 2CpTl \longrightarrow \underset{1}{Cp_2TiCl} + 2TlCl$

2) In situ Cp_2TiCl (lime green solution) is prepared quantitatively from titanocene dichloride and powdered zinc in THF.[1]

$2Cp_2TiCl_2 + Zn \longrightarrow 2Cp_2TiCl + ZnCl_2$

Figure 1 Excerpt from Spotlight issue number 1

This year, *Synlett* celebrates its 20th birthday, and the 300th edition of Spotlight is to be published in issue 24. After ten years, the Spotlight section has become quite established and is well recognized by readers. Thus, after 300 editions, what could we extract from this innovative section and how has it changed? This summary will provide some facts and figures on the Spotlight section and highlight its influence on the international chemistry community. The data presented here were collected from the *Synlett* homepage[2] and from the ISI Web of Knowledge[3] and reflects only the author's impressions. Further, supplementary material is available for more information concerning Spotlights.

From a geographical point of view, in the first two years of publication, more than 70% of Spotlight articles originated from Europe (Table 1). However, the publication of two articles from India presaged the fundamental change that would occur over the following years. A screening of articles by region over the last two years indicates a completely different situation is developing in which contributions from the Asian scientific community has begun to predominate. Unfortunately, so far there have been no Spotlight articles from African groups.

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Table 1 Spotlight Contributors by Region

Region	Spotlights (%) 1999–2000	1999–2008	2008–2009
Europe	**75**	33	26
Asia	12.5	43	40
North-America	12.5	8	4
South-America	0	11	23
Middle East[a]	0	4	4
Oceania[b]	0	1	3

[a] Only Iran.
[b] Only Australia.

Looking at the distribution of contributions by country (Table 2), it is noteworthy that the developing countries, and notably the BRIC countries (except Russia, which has not yet contributed to Spotlight) are leading the publica-

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tion table for this section, with India accounting for 33% of all articles, followed by Brazil, China, the European countries and USA. It is also remarkable that Iran, with twelve articles, is the only representative of the Middle East region. This compilation uses affiliations at the time of publication and does not represent the nationality or current address of the authors.

Table 2 Spotlight Contributors by Country

Country	Number of Spotlights	Total number (%)
India	98	33
Brazil	31	10
China	28	9
UK	18	6
USA	18	6
France	14	5
Germany	14	5
Spain	14	5
Iran	12	4
Switzerland	10	3

When an evaluation of author affiliations was conducted (Table 3), the results showed that there was a correlation between the leading countries and the leading universities in terms of number of published articles. Also, there is only one of the leading universities in the world as pointed by several controversial rankings.[4]

Table 3 Spotlight Author Affiliations

University/Research Center	Country	Spotlights
National Chemical Laboratory	India	17
Universidade Federal do Rio de Janeiro (UFRJ)	Brazil	14
Regional Research Laboratory	India	12
Indian Institute of Chemical Technology	India	11
Defense Research and Development	India	9
Hebei Normal University	China	
Bu-Ali Sina University	Iran	8
National Institute of Pharmaceutical Education and Research (NIPER)	India	7
University of Cambridge	UK	
Universidade Nova de Lisboa	Portugal	6

In order to assess the pertinence of Spotlights, the number of citations of articles was compiled (Table 4). In this context, it could be said that the average number of citations for articles published shortly after the launch of Spotlights remains between two and five. Articles published over the last few years are probably too recent to be cited.

Table 4 Number of Article Citations

Year	Spotlights	Citations	Citations by Spotlight
1999	12	61	5
2000	12	61	5
2001	12	57	5
2002	18	44	2
2003	24	108	4
2004	28	95	3
2005	40	131	3
2006	36	59	2
2007	40	18	0
2008	38	8	0
2009	39	0	0

The most cited articles are presented in Table 5, together with the respective number of citations. Only four reagents have been included in more than one spotlight article: 2-iodoxybenzoic acid (IBX) (Sp 14[5] and 124[6]), ceric(IV) ammonium nitrate (Sp 6[7] and 143[8]), palladium(II) acetate (Sp 4[9] and 150[10]), proline (Sp 60[11] and 168[12]) and the Burgess reagent (Sp 16[13] and 264[14]). Obviously, when a Spotlight covered a general class of compounds, for example bismuth(III) derivatives (Sp 31[15]), the article usually includes a number of individual reagents such as the issue on bismuth(III) trifluoromethanesulfonate (Sp. 67[16]). Except for the author of this 300th

special issue,[17] no single author has published two Spotlights.

Table 5 Most Cited Spotlight Articles

Times citeda	Title/Reagent	Author
23	2-Iodoxybenzoic Acid (IBX) and Dess–Martin Periodinane (DMP)[5]	S.S. Chaudhari
21	Bismuth(III) Derivatives: New Catalysts[15]	S. Vidal
17	DBU (1,8-diazabicyclo[5.4.0]undec-7-ene) – A Nucleophillic Base[19]	N. Ghosh
16	Zirconium Tetrachloride[20]	U. Bora
15	Bismuth(III) tris(trifluoromethanesulfonate)[16]	S. Antoniotti
15	Molecular Iodine[20]	S.-Y. Wang

[a] Data up to June 30th, 2009.

Table 6 Simulated Spotlight Impact Factor

Year	Calculated impact factor (IF)
2001	0.417
2002	0.958
2003	0.563
2004	0.524
2005	0.615
2006	0.618
2007	0.893
2008	0.547

Using the number of citations to each Spotlight, an impact factor (IF) for the Spotlight section was compiled as if this section were a journal. To do this, it was calculated for each year the number of times ISI-indexed journals cited a spotlight article published in the preceding two years and divided this number by the total number of spotlight articles published in those two years.[21] As can be seen from the Table 6, the simulated IF reached its highest values in 2002 and 2007 followed by a decrease. In order to avoid misinterpretation of these values[22] it is important to note that the low number of Spotlight articles and associated citations make any statistical analysis problematic; the sole conclusion that we can draw here is that if Spotlight were a journal then its impact factor would be greater than 0.5. It should be remarked that attaining a high IF was never the goal of the section.

As concluding remarks, the Spotlight section gives young researchers at the beginning of their careers an opportunity to publish information on interesting and relevant subjects. The preparation of a manuscript requires the student to stay connected with recent updates of the literature. Moreover, as the sole author of a Spotlight article, the student actively participates in the peer review process, which commonly involves defending their position, accepting criticisms and finally being judged by the scientific community, without direct interference from supervisors; overall, this process greatly enhances the professional maturity of the student. As a consequence of the publication, theses student-authors usually become part of the journal's board of referee's, which can also lead to their professional development.

Furthermore, it is not only the student that benefits from publishing a Spotlight article: some governmental funding agencies (e.g. CAPES – Brazil) have already recognized and highlighted Spotlight publications in the performance evaluation of graduate schools.

The Spotlight layout, which is direct and easy to read, allied with the fact that it is freely available through the Thieme/Synlett Internet portal, accounts for its recognition as a first line reference source, as indicated by the number of citations of some articles. This open-access model could also influence the observed geographical distribution of the Spotlight contributors and readership, who generally originate from recent developing countries.

After 10 years, 298 different student authors from 29 countries have published 300 Spotlights covering reagents from the simplest 'The Electron' (Sp. 187[23]) to complex polymers, metal complexes, or systems involving several chiral centers, and received 698 total citations. Today, there are still only three internationally recognized journals that contain sections directed towards graduate students: *Synlett* Spotlight, Nature's post doc journal and Mini Review: Green Cluster of Research Journal of Chemistry and Environment. Thus, graduate students all over the world congratulate *Synlett* and its editorial board for this innovative section and for allowing us to participate in the peer-review process of chemistry.

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