

Differences of Moves in Chinese and English Chemical Industry and Engineering Abstracts—A Case Study on *Progress in Polymer Science and Chemical Industry and Engineering Progress*

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Abstract

Abstract writing and translation have always been the emphasis and difficulty in thesis writing. Discourse structures and language features of abstracts are two major elements. In this paper, a total of 101 abstracts in *Progress in Polymer Science* and *Chemical Industry and Engineering Progress* from January 2017 to December 2018 are taken as examples. Based on analysis of Move Differences, the paper describes structural characteristics and discourse features of abstracts in two top-level journals in chemical industry, reveals differences between Chinese and English abstracts to provide reference for domestic authors' writing and translation.

Keywords

Move Differences, Abstract Analysis, Discourse Structure, Language Feature

1. Introduction

There are great differences between Chinese and western scholars in language habits and thinking modes, which are especially reflected in the paper writing by Chinese and western scholars. In recent years, the number of Chinese scholars submitting articles to authoritative foreign journals (SCI, EI, etc.) has increased. Through literature review, it is found that Chinese scholars mostly study the abstract writing of scientific and technological papers, while there is less comparative study between Chinese abstracts and English abstracts. Some Chinese re-

searchers often write papers in Chinese and publish it in foreign journals after translation. Therefore, the translation of abstracts is also particularly important. Studying the structure and discourse characteristics of the abstracts in two different languages can also provide some references for abstract translation (Zeng & Liu, 2016: p. 18-21).

The two kinds of journals selected in this paper are both top chemical journals at home and abroad. The English journal, *Progress in Polymer Science*, is an internationally recognized top review journal in the field of polymer science and engineering, with an impact factor of 24.558 from 2017 to 2018, and is included in SCI and SCIE. The types of the paper include not only traditional polymer science and technology fields (chemistry, physics and engineering involving polymer), interdisciplinary development fields (such as functional and special polymers, biomaterials, polymers and drug delivery, polymers in electronic applications), composite materials, conductive polymers, liquid crystal materials, interphase materials between polymers and ceramics, and new manufacturing technologies that have made significant contributions. The Chinese journal, *Chemical Industry and Engineering Progress*, is a comprehensive scientific and technological journal in chemical industry and related fields published by the China Association for Science and Technology, the CIESC and the Chemical Industry Press. It is a comprehensive sci-tech journal in chemical industry and related fields. The composite impact factor of the Chinese journal *Chemical Industry and Engineering Progress* in 2017 is 1.286 and the composite impact factor is 0.877, ranking 2nd in the comprehensive ranking of chemical engineering sci-tech journals (derived from the Citation Report of Chinese Sci-tech Journals (Core Board)). It is a source journal of Chinese core journals, science and technology core journals and source journal of China Science Citation Database (CSCD). It was included by CA and Japan's JICST and has been included by EI Compendex since 2016. Both of them are top foreign and domestic chemical journals. Searched on CNKI, VIP, Wanfang and other academic websites, it is found that so far there has been no comparative analysis of Chinese and English abstracts of *Progress in Polymer Science* and *Chemical Industry and Engineering Progress*. In view of this, based on the theory of four-move pragmatic model analysis, this paper selects 101 English abstracts from *Progress in Polymer Science* and *Chemical Industry and Engineering Progress* from January 2017 to December 2018, analyzes their discourse structure and linguistic features through self-built corpus, reveals the differences between the two language abstracts, and provides some references for Chinese scholars to write and translate abstracts when submitting articles to such journals (Li & Wang, 2012: p. 76-79).

2. Background

As a special literary form, abstracts of scientific research papers have specific discourse structures and linguistic features. Many scholars use different structural models to analyze the abstracts (Che, 2009: p. 492-493). Salager-Meyer (1992: p. 110-111) proposed to analyze the abstract in six moves of state-

ments-purpose-method-result-conclusion. Bhatia (1993: p. 79) thought that the structure of the abstract should include four moves: introduction-method-result-conclusion. Ge Dongmei used five moves of background-purpose-method-result-conclusion to analyze the abstract in her paper (Ge & Yang, 2005: p. 138-146). According to the abstracts of the two selected journals and the above-mentioned structural model as well as the characteristics of summary paper abstracts, the four moves of background-statement-result-conclusion best reflects the characteristics of chemical paper abstracts, so this paper mainly adopts this structural model based on the analysis of practical situations.

3. Research Methods

3.1. Establishment of Corpus

In this study, we selected *Progress in Polymer Science* and *Chemical Industry and Engineering Progress* as corpus source from SCI and Chinese core journals respectively, which have high credibility. Considering the timeliness of the corpus, 48 abstracts of *Progress in Polymer Science* and 53 abstracts of *Chemical Industry and Engineering Progress* from 2017 to 2018 were selected to build two small corpora (domestic corpus and foreign corpus) of chemical industry. These two corpora are represented in S1 (English) and S2 (Chinese), respectively (van Rij-Heyligers & Li, 2011: p. 39-44).

3.2. Discourse Structure Analysis

According to the four-move of background-statement-result-conclusion selected above, each corpus is marked with Move. For the convenience of following description, the background is Move1 (M1), the statement is Move2 (M2), the result is Move3 (M3), and the conclusion is Move4 (M4) to count the sequence and frequency of occurrence of move, so as to analyze the discourse structure characteristics of the Chinese and English abstracts. In addition, chi-square test was used in the paper to test the accuracy of the analysis results. Chi-square test is a test method to judge whether the theoretical value is correct and whether there is significant difference between the actual observed value and the theoretical inference value by counting the deviation degree between the actual observed value and the theoretical value of the sample (Liu, 2006: p. 200-201 + 101).

3.3. Analysis of Discourse Linguistic Features

Statistics on linguistic features and distribution in specific discourse moves help us to understand abstracts in specific subject areas. Analyzing the linguistic features of each move in the abstract of the same subject is helpful to the normative writing of the abstract. This study analyzes three types of linguistic features, namely: Verb tenses, verb voices and logical conjunctions. The choice of these three linguistic features is due to the fact that these are all necessary factors to consider in writing. Also, although there are a lot of materials and documents

that give some prescriptive usage, the usage is also controversial due to different usage scenarios and different disciplines, confusing scientific researchers. For example, in the use of verb tenses, it is advocated that scientific research papers should massively use the present tense (including the present tense and the present perfect tense) (Kang & Sun, 2012: p. 28-31); In the use of voice and person, the passive voice and the third person are commonly used in scientific research papers. However, over the years, more and more scholars have begun to use the active voice. In recent years, many Chinese authors advocate or prefer that Chinese abstracts can also be written in the first person. The analysis of verb tenses focuses on the three tenses with the highest occurrence frequency, namely, the simple past, the simple present and the present perfect. The analysis of verb voice mainly includes active and passive forms. Logical cohesion words mainly include First, Second/Then/Next, finally, however. In order to eliminate the influence of the different number of sentence segments on the statistical results, we calculate respectively the proportion of each linguistic feature to the total number of abstracts, and analyze and count the distribution frequency of each linguistic feature in each move of each abstract to reveal the relationship between moves and the application of linguistic features. This study analyzes the real corpus of specific subjects, so the conclusion is relatively objective.

4. Data Analysis and Discussion

4.1. Discourse Structure Analysis

By analyzing and counting the move sequence of discourse, it is found that in Chinese and English abstracts, the number of abstracts appearing in the sequence of M1-M2-M3-M4 is 45 and 50 respectively, the number of abstracts appearing in move circulation is 2 and 3, and the number of abstracts appearing in move missing is 1 and 0, and there is no abstracts appearing in the inverse order of moves. On the whole, in abstracts of chemical papers, domestic and foreign authors usually arrange the discourse structure in a sequential way.

As shown in **Table 1**, in S1, the frequency of occurrence of M1, M2, M3 and M4 is above 90%. In S2, only 83% of abstracts have M1, and all the remaining three moves are found in 101 abstracts. Therefore, the frequency of move occurrence of S1 is not much different from that of S2. Only a small part of Chinese abstract lacks M1, and research backgrounds are rarely mentioned. These abstracts always begin with “This paper summarizes/describes...”. M2, M3 and M4

Table 1. Frequency of moves in English and Chinese chemical abstracts.

Journals	M1 (backgrounds)	M3 (statements)	M4 (results)	M5 (Conclusion)
Progress in Polymer Science	90	100	100	95
Chemical Industry and Engineering Progress	83	100	100	100

The unit is %.

summarized the research contents, results and conclusions of the paper. So these three moves are most complete in the abstracts. Compared with Chinese journals, English journals also lack the research background and research conclusions. In the conclusion part, less attention is paid to the application prospect.

According to the author's analysis, the main reason for this situation is that 101 papers in the corpus are summary papers, and the focus of the abstracts is to describe the research content of their articles. Therefore, compared with experimental papers, some authors may think that the research background is not necessary. However, as the first part of the abstract, the research background describes the problems to be solved in the article. For readers, this part provides the value and significance of the problems to be understood. Therefore, the author believes that the research background is an essential part of the abstracts.

4.2. Analysis of Language Features

4.2.1. Verb Tense

In the self-built corpus S1 and S2, there are three tenses, namely: The simple past, the simple present and the present perfect. This study mainly analyzes the frequency of the use of these three tenses. English has definite tense markers, such as grammatical markers (progressive tense: -ing; past tense: -ed; perfect tense: have/had done) and semantic markers (present tense: often, usually, sometimes, always; present progressive: now, at the moment, right now; present perfect: already, yet, ever, never, before, just, recently, etc.). Due to the particularity of the Chinese, it is impossible to judge the tense. We study Chinese abstracts referring to the English translation of the abstracts and mainly analyze the tense of the translation.

Taking M1 of some abstracts as an example:

Example 1: English Abstract:

1) The success of Tissue Engineering (TE) based approaches is strongly dependent on the development of novel biomaterials for the design of 3D matrices with tailored biomechanical properties to promote the regeneration of human tissues and organs. (*Progress in Polymer Science: The potential of unsaturated polyesters in biomedicine and tissue engineering: Synthesis, structure-properties relationships and additive manufacturing*)

2) Over the last decade, numerous biopolymers have received more attention in medical applications involving novel biomaterials because of their biocompatibility, biodegradability, and ease of processing. (*Progress in Polymer Science: The potential of unsaturated polyesters in biomedicine and tissue engineering: Synthesis, structure-properties relationships and additive manufacturing*)

Example 2: Chinese Abstract:

1) 二氧化钒是一种具有热致相变性质的功能材料, 其相变温度接近于室温, 在相变温度处发生金属-绝缘体转变并伴有电阻率和红外发射率的突变, 具有重要的研究价值和潜在的应用前景。

Translation: Vanadium dioxide is a thermochromic functional material that undergoes a reversible metal-insulator phase transition at near room tempera-

ture. This phase change is accompanied by a marked change in resistivity and infrared emissivity. Vanadium dioxide materials are of important research value and potential application prospects. (*Chemical Industry and Engineering Progress*: Application advances of vanadium dioxide in infrared camouflage and stealth technology)

2) 磷酸类金属——有机骨架(MOFs)材料作为众多 MOFs 材料家族中的一类, 近年来受到了研究者的广泛关注。

Translation: Phosphonate metal-organic framework (MOFs), one kind of the MOFs materials, has attracted much attention in recent years. (*Chemical Industry and Engineering Progress*: Progress of application for CO₂ adsorption with phosphonate metal-organic frameworks)

As shown in **Table 2** and Example 1 and 2, the verb tenses used in Chinese and English abstracts differ greatly. In M1, the frequency of using simple present tense in Chinese and English abstracts is 70% and 90%, while only 30% and 10% of abstracts use the present tense, showing high similarity. English abstracts do not have past tense in the four moves, and present perfect tense is seldom used in M2 and M3. The tenses most frequently used in Chinese abstracts are the simple present tense and the simple past tense. The past tense mainly appears in M2, M3 and M4. The present tense is usually used in describing writing background in abstracts of scientific research papers to show preciseness.

Chi-square test is used to test whether the results have significant differences (taking M1 as an example). The specific steps are as follows:

Step 1: We count the number (actual frequency) of abstracts using past tense, present tense and present perfect tense in S1 and S2 totaled 101 abstracts, set the number as F_0 ;

Step 2: We presuppose that the tense difference between Chinese and English abstracts is not obvious in M1, and the expected frequency f_e is 101/6 (101 abstracts are equally distributed in 6 cases)

Step 3: According to the data, the following **Table 3** is listed:

Step 4: According to the actual frequency and the expected frequency, calculate chi-square value

Table 2. Frequency of tenses in English and Chinese chemical abstract moves.

Journals	Tense	M1 (background)	M2 (statement)	M3 (result)	M4 (conclusion)	Total
Progress in Polymer Science	Past	0	0	0	0	0
	Present	90	96	87	100	89
	Present perfect	10	4	13	0	11
Chemical Industry and Engineering Progress	Past	0	30	42	45	27.5
	Present	70	50	58	55	60
	Present perfect	30	20	0	0	12.5

The unit is %.

Table 3. Chi-square value of tenses in English and Chinese chemical abstract moves.

Journals	Progress in Polymer Science			Chemical Industry and Engineering Progress			
	Tense	Past	Present	Present perfect	Past	Present	Present perfect
actual frequency f_o	M1	0	43	5	0	37	16
	M2	0	46	2	16	26	11
	M3	0	42	6	22	31	0
	M4	0	48	0	24	29	0
expected frequency f_e		16.83	16.83	16.83	16.83	16.83	16.83

$$\begin{aligned}
 X_2 &= \sum \left[\frac{(f_o - f_e)^2}{f_e} \right] \\
 &= \left[\frac{(0 - 16.83)^2}{16.83} \right] + \left[\frac{(43 - 16.83)^2}{16.83} \right] + \dots + \left[\frac{(16 - 16.83)^2}{16.83} \right]; \\
 &= 106.89
 \end{aligned}$$

Step 5: Calculating degrees of freedom. Degree of freedom refers to the number of variables whose values are not limited when a certain statistic is calculated. The formula is $df = n - k$. Where, n is the number of samples, and k is the number of restricted conditions or variables. In this paper, $n = 6$, $k = 1$, $df = n - k = 6 - 1 = 5$;

Step 6: Looking up the critical value table of chi-square test, we choose significance level $\alpha = 0.05$, $df = 5$, and chi-square value = 11.070. In data statistics, when the actual chi-square value is less than the standard chi-square value, there is no significant difference between the result and the expected value; when the actual chi-square value is more than the standard chi-square value, the result is significantly different from the expected value. In this study, $X_2 > 11.070$, so the original assumption is not valid, and the tense difference between Chinese and English abstracts is very obvious in M1.

Similarly, the chi-square values X_2 of M2 = 121.37, X_2 of M3 = 118.04, X_2 of M4 = 127.69. When $\alpha = 0.05$, the chi-square values of M2, M3 and M4 are all greater than 11.070. Therefore, the original assumption is not valid, the tense difference between Chinese and English abstract is very obvious in M2, M3 and M4.

4.2.2. Voice of Verb

The traditional concept is that the passive voice should be widely used in scientific research papers to express its popularity and professionalism. However, in recent years, more and more scholars have begun to use the active voice (Zhang & Li, 2011: p. 18-21). This study finds out the rules of using the voice by studying the tense of each move. English has obvious voice marker. Due to the particularity of Chinese, it is impossible to judge the specific tenses. Therefore, when studying the Chinese abstracts, we referred to the English translation of the abstracts and mainly analyzed the tense of the translation.

We took M2 of some abstracts as an example:

Example 3: English Abstracts:

1) This review comprehensively describes the chemical polymerization methods ... We highlight the complexity observed in these macromolecules due to the number and variety of stereo- and regio-types of glycosidic linkages present between monosaccharide residues. (*Progress in Polymer Science*: Chemical synthesis of polysaccharides and polysaccharide mimetics.)

2) This review highlights recent advances in the micellization of synthetic graft copolymers and those based on natural precursors, particularly polysaccharides. (*Progress in Polymer Science*: Micellization of synthetic and polysaccharides-based graft copolymers in aqueous media)

Example 2: Chinese Abstracts:

1) 本文介绍了多孔液体的概念,总结了三类多孔液体制备方法,分析了其特点和形成条件。(*Chemical Industry and Engineering Progress*: Review on porous liquids and its application in carbon dioxide Sequestration)

Translation: In this paper, the concept of porous liquids was introduced, the preparing methods of three type porous liquids were summarized, and their characteristics and synthetic conditions were analyzed.

2) 本文较全面系统地介绍了制备固载化离子液体的方法:浸渍法、化学键合法、键合-浸渍法、溶胶-凝胶法以及聚合法,并对上述各种固载方法的优缺点进行了比较;(*Chemical Industry and Engineering Progress*: Progress in preparation of supported ionic liquids and its application in catalytic hydrogenation reactions)

Translation: In this paper, the methods of preparing supported ionic liquid were described, such as impregnating, covalent bonding, bonding-impregnating, sol-gel method, and polymerization, with their respective advantages and disadvantages compared.

As shown in **Table 4** and Example 3 and 4, when using the verb voice, foreign scholars mostly use the active voice, with the proportion above 70%. Chinese scholars mostly use active voice in M1, accounting for 61%. But they mostly use passive voice in M2, M3 and M4, accounting for 69%, 79% and 82% respectively (far higher than 31%, 21% and 18% in S1). According to the author's analysis, writers always describe the writing background in M1, and the subject is usually the research object, so there is no need to use passive voice. However, in M2, M3 and M4, subjects are usually subjective concepts such as "this paper" or "the

Table 4. Frequency of voices in English and Chinese chemical abstract moves.

Journals	voice	M1 (background)	M2 (statement)	M3 (result)	M4 (conclusion)	Total
Progress in Polymer Science	Active	78	75	74	75	73
	Passive	22	25	26	25	27
Chemical Industry and Engineering Progress	Active	61	31	21	18	23
	Passive	39	69	79	82	77

The unit is %.

author". Therefore, in order to express objectivity, Chinese scholars have made extensive use of passive voice in English translation. The traditional concept is that passive voice should be widely used in scientific research papers, but the results of this study show that active voice is more frequently used in abstracts of foreign papers. Using active voice is the mainstream trend. In addition, the research results also show that there are many situations in which Chinese abstracts are changed from active to passive in translation. Chinese scholars should conform to the new trend and avoid using passive voice extensively when translating, resulting in long subjects and poor reading.

Using the Chi-square test to test the conclusion, the following frequency distribution **Table 5** (M1) is listed:

The chi-square values X_2 of M1 = 16.01, X_2 of M2 = 16.37, X_2 of M3 = 17.52, X_2 of M4 = 17.83, and $df = 3$. When $\alpha = 0.05$, the chi-square values of M1, M2, M3 and M4 are all greater than 7.815. Therefore, the original assumption is not valid, the voice difference between Chinese and English abstract is very obvious in M1, M2, M3 and M4.

4.2.3. Logical Conjunction

Maintaining the continuity is a big problem for many Chinese scholars when writing and translating English abstracts. How to make the language coherent involves discourse continuity (Qie, 2008: p. 5-9).

In this study, we found the logic rules of Chinese and English chemical abstracts by counting the frequency of the logical conjunction (first, second/then/next, finally, however) in S1 and S2.

Taking **Then** and **However**, which have the highest frequency of occurrence, for example:

Example 5: English Abstract:

1) In this review, we first introduce theoretical modeling and simulation methods ... and hybrid modeling methods. Then, the application of these methods ... and kinetic mechanisms underlying the formation of self-assembled structures. (Progress in Polymer Science: Theoretical modeling and simulations of self-assembly of copolymers in solution)

2) However, it is challenging to guide hPSC differentiation into desired cell

Table 5. Chi-square value of voices in English and Chinese chemical abstract moves.

Journals	Progress in Polymer Science		Chemical Industry and Engineering Progress	
	Active	Passive	Active	Passive
actual frequency f_o				
M1	37	11	32	21
M2	36	12	16	37
M3	35	13	11	42
M4	36	12	10	43
expected frequency f_e	25.25	25.25	25.25	25.25

lineages due to their varying differentiation ability. (Progress in Polymer Science: Polymeric design of cell culture materials that guide the differentiation of human pluripotent stem cells)

Example 6: Chinese Abstract:

1) 而动力学控制、离子转移路径等机理方面欠缺。(Chemical Industry and Engineering Progress: Recovery of Co and Li from spent lithium ion batteries)

Translation: However, little work has been made on the leaching mechanism such as kinetic control and ions transfer path.

2) 本文首先在综合介绍.....然后通过对 TDS 试样预处理技术发展水平.....最后, 基于 TDS 数据后处理的现有理论及研究进展, 讨论了 TDS3 种拟合模型的适用性以及在其处理多陷阱曲线重合问题时反褶积过程的复杂性。(Chemical Industry and Engineering Progress: Application of TDS technology in the study of hydrogen traps in the materials of hydrogen storage vessels)

Translation: First, the effect of the transformation ... and development history. Then the effect of hydrogen pre-charging and ... when the TDS curves of two or more hydrogen traps overlapped with one another. Finally, the state of the art and the outlook for the post-processing theories and research development of TDS data were presented.

As shown in Table 6 and Example 5 and 6, in S1, Second/Then/Next and Finally appear 3 and 5 times respectively as logical conjunction, and First appears twice; In S2, Second/Then/Next and Finally, as logical conjunction, appeared 8 and 7 times respectively, and First appeared 4 times. Moreover, in the two journals, First usually matches with Then and appears in M2 of the same abstract, connecting the main contents elaborated in the abstract. However usually appears in the background and conclusion of English abstract and Chinese abstract, with frequencies of 6 and 7 respectively, with little difference. Generally speaking, the overall frequency of logical cohesion words in S1 and S2 is not high, but the frequency of S2 is slightly higher than it of S1. According to the author's analysis, in order to better express all kinds of explicit or implicit logical

Table 6. Frequency of logical conjunction in English and Chinese chemical abstract moves.

Journals	Logical conjunction	M1 (background)	M2 (statement)	M3 (result)	M4 (conclusion)	Total
Progress in Polymer Science	First	1	1	0	0	2
	Second/Then/Next	0	3	0	0	3
	Finally	0	0	0	5	5
	However	5	0	0	1	6
Chemical Industry and Engineering Progress	First	0	4	0	0	4
	Second/Then/Next	0	5	3	0	8
	Finally	0	0	0	7	7
	However	3	1	0	3	7

Unit is time.

relations in Chinese, Chinese scholars have added logical conjunctions to make the translation smooth (Tang & Xia, 2009: p. 154-157). However, the author believes that Chinese scholars use logical conjunctions too much or inaccurately in some places, which lead to obvious traces of translation, while foreign scholars use more implicit logical means in writing.

In addition, by analyzing the texts of the two corpora, Chinese scholars have split sentence patterns when translating abstracts. Here are two examples:

Example 7: English abstract

Covering a wide range of experimental and theoretical work, this review aims to illustrate major scientific advances of the past years, focusing in particular on the underlying physics that governs the fundamental interactions between an external electric field and block copolymer mesophases and its impact on phase behaviour and orientational order in bulk, solution, and thin films. (*Progress in Polymer Science: Block copolymers in electric fields*).

Example 8: Chinese abstract

本文从钒基催化剂上丙烷氧化脱氢的反应机理入手，对比了有氧和无氧条件下的丙烷氧化脱氢反应，分析了氧气的存在对丙烯选择性造成的不利影响，介绍了近几年所采用的提高丙烯选择性和收率的新的工艺方法，简述了颇具工业化前景的流化床反应器和膜反应器在丙烷氧化脱氢反应中的应用。 (*Chemical Industry and Engineering Progress: Research progress in the oxidative dehydrogenation of propane over vanadia-based catalyst: from aerobic to oxygen-free reaction*)

Translation: In this paper, the possible mechanisms of ODH of propane over vanadia-based catalyst have been introduced in detail. The detrimental impact of O₂ on the propene selectivity has been analyzed and the comparison of propane ODH with and without O₂ has been carried out. New processes to improve propene selectivity and yield have been introduced. The applications of fluidized bed reactor and membrane reactor are discussed which might be a promising alternative for propene production in the future.

The above two paragraphs are all taken from M2 (statement) of abstracts, which illustrates the general content of the paper and uses parallel sentence patterns. In the English translation of the Chinese abstracts, a whole paragraph of content is divided into several short sentences. Although the content is clearly expressed, the sentence structure is divided, lacking logical relation, and the reading is unsmooth. In the English abstracts, the author skillfully uses the present participle phrase to connect a whole paragraph together, making the sentence pattern and semantics coherent and smooth, and the logical relationship is clear. Present participle phrase is used to carry on the context, or to express juxtaposition, or to express cause and effect. This usage is very popular in English writing. It is hoped that Chinese scholars can master some such methods or techniques and apply them to abstract writing or translation.

5. Conclusion

Based on Move analysis and quantitative analysis, this paper builds two corpora

(S1 and S2), and counts the frequency of occurrence of moves, verb tense, verb voice and logical conjunction respectively. Through comparative analysis, it is found that: in terms of discourse structure, Chinese scholars usually arrange moves in a sequential way and use fewer move circulation, which is not much different from that of foreign scholars. Lack of moves (lack of writing background) occasionally occurs, and Chinese scholars should pay more attention to writing backgrounds. In terms of language features, foreign scholars mostly use the simple present tense and active voice, while Chinese scholars mostly use the simple past tense and passive voice, and overuse the simple past tense and passive voice in some moves. At present, the present tense and the active voice have become the mainstream language features in paper writing, so Chinese scholars should pay attention to this trend in language application and translation. Compared with foreign scholars, Chinese authors use more logical conjunctions and divide long Chinese sentences into short English sentences with simple structures when translating, which should be taken as a warning. In this study, the English translations of Chinese abstracts are compared with the English abstracts in the analysis of language characteristics, which is helpful for teaching and research in the translation of chemical abstracts. It is beneficial for researchers in this field to master the language application skills of writing and translation, and to understand the abstract writing structure model and language features of international norms. This study provides a reference for writing a qualified English abstract.

This paper also has some limitations. Besides the three types of features mentioned in this paper, there are other language features in the abstract, including adjectives, modal verbs, class joins, etc. Due to limited space, this paper only introduces three most common language features that are prone to errors in writing or translation. Other features need further research and exploration.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Che, J. X. (2009). Science Genre Analysis and Language Features of Abstracts of Scientific Research Papers. *Journal of Northwest University (Philosophy and Social Sciences Edition)*, 39, 166-168.
- Ge, D. M., & Yang, R. Y. (2005). Genre Analysis of Abstracts of Academic Papers. *Modern Foreign Languages*, No. 2, 138-146.
- Kang, Q., & Sun, P. (2012). Corpus-Based Genre Analysis of English Abstracts of Scientific Research Papers. *Foreign Language Teaching*, 33, 28-31.
- Li, Q. M., & Wang, X. X. (2012). A Corpus-Based Study of Explicit Features in Translation of Abstracts of Scientific Papers. *Journal of Changsha University of Technology (Social Science Edition)*, 27, 76-79.
- Liu, X. L. (2006). The Application of Chi-Square Test in Language Research. *Asking for Help*, No. 8, 200-201 + 101.

- Qie, C. S. (2008). The Expression of Implicit Logical Relations in Chinese-English Translation of Science and Technology. *China Science and Technology Translation, No. 4*, 5-9.
- Tang, Y. X., & Xia, W. R. (2009). Analysis on the Application of Logical Cohesion in English Abstracts of Scientific Papers. *Journal of Yunnan University for Nationalities (Philosophy and Social Science Edition), 26*, 154-157.
- Van Rij-Heyligers, J., & Li, P. (2011). Corpus-Based Genre Contrastive Analysis of Abstracts of Academic Papers. *Journal of Xi'an Foreign Studies University, 19*, 39-44.
- Zeng, W. H., & Liu, P. (2016). Enlightenment of Analogy Corpus Analysis on Writing and Translating Titles and Abstracts-Taking Nature and Science Original Scientific Research Papers as Examples. *Research on Chinese Science and Technology Periodicals, 27*, 223-229.
- Zhang, X. R., & Li, Z. S. (2011). An Empirical Study on the Frequency of First Person Pronouns and Their Discourse Functions in Scientific Papers. *Journal of Xi'an Foreign Studies University, 19*, 18-21.