Indian Journal of History of Science (2025) 60:500–502
https://doi.org/10.1007/s43539-025-00195-y

BOOK REVIEW

Rasopaniṣad: A discourse on Indian alchemy—English translation and exposition of scientific content by Vijaya Jayant Deshpande, Pune: Bhanadarkar Oriental Research Institute, 2022. ISBN:9789392194030, Pp.viii + 368. Price Rs. 1000/-

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Received: 27 October 2025 / Accepted: 31 October 2025 / Published online: 2 December 2025
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Vijaya Deshpande's *Rasopaniṣad* is a substantial scholarly enterprise that seeks to present a comprehensive English translation and scientific exposition of one of the most intricate works of Indian *Rasaśāstra*. It successfully opens a previously underrepresented Sanskrit text to modern scientific and historical analysis, combining philological knowledge with a trained chemist's interpretive insight. It is indeed a commendable task to have translated 2500 + verses from Sanskrit to English. Striking features of this translation are the introductory chapter giving an overview of the entire book, various appendices giving interesting compilations of chemical terms, plants, and measures of weight. Yet, while the book achieves much in bridging the Sanskrit textual tradition and modern science, its interpretive framework and textual presentation call for a more careful engagement with the epistemological nuances of Indian chemistry.

However, on the chronological aspects, it is already well known that most of the Indian texts, particularly those carrying scientific contents, are not accurately dated yet. Therefore, giving absolute dates to texts like *Rasārṇava* and *Rasārṇavakalpa* is refreshing and disappointing at the same time because Deshpande does not explain the rationale to arrive at the proposed absolute dates. In this context, the absence of the mention of Bhudeb Mukherjee is highly conspicuous. Deshpande mentions *Arthaśāstra* in the context of 'synthesizing gold and silver coloured amalgams…' though without quoting the original verse (although the sentence starts as "Following verse of *Arthaśātra* reflects…") after placing this text in 3rd or fourth century BCE, while elsewhere (p. 8) mentioning that the conversion of base metals to gold was made possible by mercury, attributing it to the tantric period or after the eighth century CE. Overall, readers are advised to take the chronologies attributed to the chemical texts with some reservations.

In the introductory chapter, there are a few avoidable errors which are listed below:

(a) Mistaking the authorship of *Rasaratnākara,* as it is attributed to Nāgārjuna in page 6 and to Nityanātha in page 8. Deshpande does not offer any explanation as to whether these are the same text or different. Such clarity would have put to rest the error propagated by P.C. Ray.
(b) The verse quoted from *Gorakṣamahita* is rigged with typographical errors that distorts the meaning besides rendering it meaningless (*lokānām tu hitārthāya yajanārtham śivāyaśca, mahodadhastu devyāyāḥ sahasradvādaśaivattum* is printed whereas the Sanskrit version has ….*śivasya ca* and *sahasradvādaśaiva tu*).
(c) Dating *Rasārṇava* and *Rasārṇavakalpa* to 12th CE is factually wrong. Even P.C. Ray gives a range of date from 8 to 11th CE.
(d) On page 6, while writing on the religio-philosophic origins of mercury, Deshpande writes "Haribīja, i.e., seed of God Shiva," which is problematic on two levels. First, *Hari* is *Viśṇu* and not *Śiva*. Second, it is *Harabīja*.
(e) In page 7, the *vedas* are presented as the earliest literary sources of Hindus written between 17th to 6th century BCE. Well, had the word 'written' been explained, it would have been clearer. In the absence of any explanation, it is safe to conclude that Deshpande is not giving any credence to the oral transmission of the *Vedas,* which dates back to several millennia. Or, if Deshpande literally means *Vedas* were put to script, this opens up newer challenges.

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One of the central cautions applicable to any work of this nature—particularly one introducing an Indian *Rasa* text to a modern audience—is the need to differentiate the Indian scientific tradition from the Greco-Arabic lineage of "alchemy." In medieval Europe and Arabia, alchemy was largely shaped by esoteric symbolism, experimental protochemistry, and often a metaphysical teleology centered on transmutation or spiritual purification. In contrast, Indian *Rasaśāstra* was a syncretic discipline that unified *Ayurveda*, *metallurgy*, *pharmacy*, and *tantra*. Its goals were neither purely mystical nor narrowly materialist but concerned with medicinal efficacy, rejuvenation (*rasāyaṇa*), and the stabilization of metals and minerals for therapeutic use. While Deshpande adopts the established English descriptor "alchemy" for accessibility, the Indian *rasa* tradition occupies a distinctive ontological and epistemic position—one that simultaneously regards mercury as a *rasadhātu* (a living essence) and a subject of empirical operation. Therefore, it is crucial to evaluate *Rasopaniṣad* not within a monolithic "alchemical" framework but within an indigenous logic of *rasa–siddhi*—a schema of transformation that encompasses chemical, biological, and spiritual dimensions.

An important feature of the *Rasopaniṣad*, evident also in Deshpande's translation, is the frequent recurrence of verses proclaiming the conversion of base metals (*loha*) into gold (*svarṇa*). These descriptions—common to many *rasa* texts including *Rasārṇavakalpa* and *Rasaratnasamuccaya*—often seem to mirror the alchemical ambition of transmutation. Yet, an interpretive reading informed by Sanskrit semantics and the precedent of *Rasārṇavakalpa* (cf. Sastri, 1928) suggests that such verses need not be read literally. Verbs such as *lohānāṃ parivartanam*, *vedha*, and adjectives like *hemasadṛśa*, *kanakavarnābham*, or *divyasvarṇopamam* frequently describe "attaining the color or luster of gold," rather than acquiring elemental gold.

As Deshpande notes, the *Rasopaniṣad* may describe processes that result in alloys or metal coatings achieving a golden sheen through amalgamation rather than genuine transmutation. This is consistent with premodern chemical practices—wherein compounds of mercury, sulfur, and copper produced visually golden surfaces explainable by modern chemistry as surface alloying or sulfide formation. The linguistic distinction between *kanakavarnam* ("golden-hued") and *svarṇam* ("gold") is subtle but essential, reflecting both terminological precision and a pragmatic material awareness among medieval Indian technologists.

Deshpande's work diverges in intent and method from K. Sambasivasastri's 1928 *Trivandrum Sanskrit Series* edition, which presented the *Rasopaniṣad* text (with variants from two Kerala manuscripts) but offered minimal commentary. Sambasivasastri's edition remains invaluable for philologists, providing approximately 2500 verses spread over eighteen chapters as part of the lost *Mahodadhi* corpus. His approach was descriptive and critical, providing variant readings but deferring interpretation largely to contextual scholars. Deshpande, in contrast, emphasizes scientific content, translating and annotating the chemical logic of these operations through the lens of modern chemistry. This interpretive boldness is indeed a fresh perspective to the ancient texts, which is very productive.

Yet, the omission of the original Sanskrit verses in Deshpande's translation represents a methodological limitation. Scholars of Sanskrit and the history of science would have benefited from parallel presentation, which remains standard practice in philologically responsible translations (e.g., A.K. Bag and B.V. Subbarayappa's editions). The absence of the primary text restricts the reader's ability to verify translations of complex technical terms—such as *rasa*, *sūta*, *gandhaka*, and *vedha*—and to engage with the syntax and morphology that support interpretive choices. The centrality of the problem of avoiding the original verses can be illustrated with the following examples. Chapter 2 of the *Rasopaniṣad* has the following verse as its concluding verse:

एवं विद्धं भवेद्धेमं जाम्बूनदसमप्रभम्

Evam viddham bhaveddhrhemam
jāmbūnadasamaprabham

But, in the introductory chapter, while summarizing each chapter of the book, Deshpande writes, "A *rasa* is synthesized (33–39), which could transmute metals like silver, copper, steel, lead, tin, brass, bell-metal or bronze in the proportions one to a thousand." Further, in Chapter 6, the 18th verse is as follows:

रसविद्धं तदा पश्येज्जाम्बूनदसमप्रभम्।
विद्यात्तं बीजमेतद्धि सहस्रांशे तु तन्न्यसेत्॥

rasaviddhaṁ tadā paśyejjāmbūnadasamaprabham |
vidyāt taṁ bījametaddhi sahasrāṁśe tu tannyaset ||

and the same is translated by Deshpande as, "Gold thus obtained appears like a *Jāmbūnada* kind of gold. This is a *Bīja* which can be thrown in thousand times its weight (the base metal)" where the inaccuracy of the translation is illustrated well. Whereas the original verse talks about the end product having the glitter similar to that of *jāmbūnada* gold. The phraseology may be subtle in variation, but it has a profound difference in the final meaning. Deshpande's rendering tends to standardize these metaphors into chemically interpretable descriptions, often translating *hemasadṛśam* or *kanakapratimam* simply as "becomes gold" or "transforms into gold." For instance, where the Sanskrit uses the simile marker *-sadṛśam*, Deshpande omits it in translation—an interpretive choice possibly intended for thematic consistency but one that narrows the semantic range besides giving unwarranted credence to the transmutation theory, which needs a very critical approach. Overall, the translations to 'transmutation' in this chapter must be critically viewed.

The richness of Sanskrit terminology in this text reflects both empirical precocity and symbolic sophistication. Terms like *sūtaka-baddha*, *dravīkaraṇa*, or *rasavedha* denote controlled processes of fusion, sublimation, and diffusion that parallel metallurgical operations. Adjectival phrases describing end products—*dīptam iva divākaram* (radiant as the sun), *kanakapratimam* (simulating gold), or *sahasarāśmi-sannibham* (effulgent with a thousand rays)—illustrate a layered semantics that blends descriptive precision with aesthetic and cosmological metaphors. Such language testifies to the epistemic unity of art, ritual, and science in medieval Sanskrit chemical discourse. Whereas Deshpande's translations have rightly brought out this richness, an analytical approach to compare some of these terminologies with other texts would have been highly informative. For instance, in Chapter 8 verse 16 has the phrase '*vajratuttha*', which is quite rare to spot except for in Kautilya's *Arthaśāstra* (second *adhikaraṇa* in the context of purifying silver). This is more than cross-referencing because the purported verse in the *Arthaśāstra* is not yet translated accurately. Deshpande translated *vajratuttha* as ferrous sulfate, albeit with a question mark. From a chemistry point of view, it would be interesting to see the evolution of the meaning of such terms from texts that were separated by several centuries.

As said above, the absence of a ready reference to the original verse becomes an impediment in understanding *Rasopaniṣad* accurately. Verse of Chapter 11 in the original reads as follows:

कन्यसस्य त्रयो भागास्तथा रसकतुत्थयोः

kanyasasya trayo bhāgāstathā rasakatutthayoḥ

And Deshpande translates it as, "Take three parts of Kanyasa (copper?), similarly those of Calamine and copper sulfate; …" There are problems of two different types. First, the first word is Kaṅsasya which means 'of *kaṅsa*' where *kaṅsa* refers to bronze. But, it is not at all clear why the copper is doubtfully proposed in the parenthesis. Further, the last word is *rasakatutthayoḥ* that is wrongly translated. Similarly, the 13th verse of Chapter 4 is given below:

चित्रकम् मारकम् दुःखम् निर्जीवम् प्राणवर्धनम्।
सुक्षीरम् घूर्णकम् मुण्ड(मु ? मू)लं रुधिरसम्भवम्॥

citrakam mārakam duḥkham nirjīvam prāṇavardhanam |
*sukṣīram **ghū**rṇakam mu**ṇḍa**(mu ? mū)lam rudhirasambhavam ||*

where the footnote corresponding to the letters in bold above are: *'cū'* and *'ṇḍam'* respectively.

Deshpande translates the same as, "Citraka, Māraka, Duḥkha, Nirjūva, Prāṇavardhana, Sukṣīra, Ghūrṇaka, Muṇḍala (Muṇḍmūla?), Rudhirasambhava" completely oblivious to the footnote given in the original, which would lead to erroneous translation. Further nuance is warranted here which concerns the metrical structure, which necessitates the words in the second line of the verse to be '*muṇḍam mūlam*' per the requirements of the *anuṣṭup chandas* in which this verse is composed. On similar notes, verse 98 in this very chapter is translated by Deshpande as follows,

> "Roast it on slow fire made of chaff and take it out when it is well cooked **(or in two weeks' time). Then mix it with the bile of a peacock and menstrual exudation of a woman and in the juice of the** plant Suniṣṇṇaka and dry in the sun." (emphasis added).

The original verse is as follows:

दहेत् तुषाग्नौ मृदुना पक्वमात्रेण चोद्धरेत् | शिखिपित्तेन सम्भाव्य आर्तवे सुनिषण्णके॥

dahet tuṣāgnau mṛdunā pakvamātreṇa coddharet
śikhipittena sambhāvya ārtave suniṣaṇṇake

Even with a very superficial knowledge of Sanskrit, one can easily see that the emphasized portions are completely missing in the original text. While taking up the mammoth task of translating the Sanskrit texts, such indulgence would help in reconstructing the allegedly erroneous verses, lest the errors will only get propagated along with creating new confusions.

In Chapter 5, the word *Śikhicandraka* appears in verse 181 as well as 236, but it is being translated as peacock feather in the former and 'plant *Śikhicadraka'* in the latter. Such contrasting translations add to the confusion of the already terse nature of the text.

Deshpande's *Rasopanisad* thus stands as a work of interpretive synthesis that bridges classical Sanskrit learning and attempts to render analytical clarity of modern science. The introductory overview and several appendices are praiseworthy, albeit with minor errors, particularly the appendix on the list of weight measures along with their contemporary understanding. In the absence of the original verses, translations may not always be accurate, as illustrated through various examples above. Yet, it will enthuse the researchers to refer to the original text, and in this way, this is a very vital addition in the corpus of translated literature, of which not many are available.

In sum, Deshpande's volume is a valuable initiative in rendering the *Rasopaniṣad* accessible to students of Indian knowledge systems and science historians alike. It demonstrates that medieval India's engagement with material transformation was not mere alchemy but a chemically informed practice integrated with Ayurveda, ethics, and metaphysics. Nonetheless, future editions may consider restoring the original verses, contextual cross-references, and a more sustained philological apparatus to enhance its long-term relevance for academic scholarship.

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