Powder X-ray Diffraction and Particle Size Analysis of the Consciousness Energy Healing Treated Vanadium Pentoxide (V\textsubscript{2}O\textsubscript{5})

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Abstract

Vanadium pentoxide (V\textsubscript{2}O\textsubscript{5}) is an inorganic compound, which is used for the chemical synthesis and other industrial applications. In this study, the impact of the Trivedi Effect®-Consciousness Energy Healing Treatment on the physicochemical properties of V\textsubscript{2}O\textsubscript{5} powder was evaluated using powder X-ray diffraction and particle size distribution analytical techniques. V\textsubscript{2}O\textsubscript{5} powder sample was divided into two parts. One part of the sample received the Trivedi Effect®-Consciousness Energy Healing Treatment remotely by a renowned Biofield Energy Healer, Gopal Nayak was termed as a Consciousness Energy Healing Treated V\textsubscript{2}O\textsubscript{5} sample, while the other part of the sample was called as a control sample. The PXRD peak intensities of the treated V\textsubscript{2}O\textsubscript{5} were significantly altered in the range from -14.29% to 54.05% compared to the control sample. Similarly, the crystallite sizes of the treated V\textsubscript{2}O\textsubscript{5} were significantly altered in the range from -13% to 111.48% compared to the control sample. However, the average crystallite size of the treated V\textsubscript{2}O\textsubscript{5} (585.74) was significantly increased by 18.08% compared with the control sample (496.04) (Figure 1). The particle size values in the treated V\textsubscript{2}O\textsubscript{5} were significantly decreased by 28.27% (d_{(100)}), 13.6% (d_{(110)}), 7.7% (d_{(200)}), and 10.25% (D (4,3)) compared to the control sample. Thus, the specific surface area of treated V\textsubscript{2}O\textsubscript{5} powder (0.393 m\textsuperscript{2}/g) was significantly increased by 64.44% compared with the control sample (0.239 m\textsuperscript{2}/g). The results concluded that the Consciousness Energy Healing Treatment might have generated a new polymorphic form of V\textsubscript{2}O\textsubscript{5} which would improve the solubility, appearance due to larger crystallite/particle size and reduced surface area compared to the control sample. The treated V\textsubscript{2}O\textsubscript{5} would also be useful for the industrial applications, i.e., bolometers and microbolometer arrays for thermal imaging, ethanol sensor, redox batteries for energy storage, etc.

Keywords: Vanadium pentoxide; Consciousness energy healing treatment; The Trivedi effect®; PXRD; Particle size

Introduction

Vanadium pentoxide (V\textsubscript{2}O\textsubscript{5}) is an inorganic compound with high oxidation state. V\textsubscript{2}O\textsubscript{5} is used for the production of an alloy of iron and vanadium (ferrovanadium), sulfuric acid, phthalic anhydride, and maleic anhydride. It is also used as a detector material in bolometers and microbolometer arrays for thermal imaging, ethanol sensor, and redox batteries for energy storage [1-3]. V\textsubscript{2}O\textsubscript{5} is very toxic to humans, which forms vanadate ion (VO\textsuperscript{3-}) by hydrolysis of V\textsubscript{2}O\textsubscript{5} at higher pH, which appears to inhibit the enzymes that process phosphate (PO\textsuperscript{3-}) [4].

The physical and chemical properties of a substance play a critical role in manufacturing and other industrial applications. It was experimentally proved that the Biofield Energy Healing Treatment (Consciousness Energy Healing Treatment; the Trivedi Effect®) has a substantial impact on the physicochemical properties of many substances [5-7]. The Trivedi Effect® is a natural and the only scientifically proven phenomenon in which a skilled person can harness this intelligent energy from the Universe and can transfer it anywhere on the planet via the possible mediation of neutrinos [7]. The "Biofield" is a unique energy field which exists surrounding the every living organism’s body known as Biofield Energy, which is infinite, para-dimensional electromagnetic field. Biofield based Energy Healing Therapies have been reported to have significant outcomes against various disease conditions [8]. The National Institutes of Health/National Center for Complementary and Alternative Medicine (NIH/NCCAM) recommend and included the Energy therapy under Complementary and Alternative Medicine (CAM) category that has been accepted by the most of the U.S. population with several advantages [9, 10]. Many scientific experiments were conducted to prove the impact of
the Trivedi Effect®-Consciousness Energy Healing Treatment on the non-living and living object(s). The Consciousness Energy Healing Treatment was proved with significant outcome in field of organic chemistry [1,12], material science [13,14], nutraceuticals [15,16], pharmaceutical sciences [17,18], cell biology [19,20], microbiology [21,22], and agriculture science [23, 24]. Therefore, this study was designed to determine the impact of the Trivedi Effect®-Consciousness Energy Healing Treatment on the physicochemical properties of V₂O₅ powder using powder X-ray diffraction (PXRD) and particle size analysis (PSA).

**Materials and Methods**

**Chemicals and reagents**

V₂O₅ powder was purchased from Sigma-Aldrich, India and other chemicals used during the experiments also purchased in India.

**Consciousness energy healing treatment strategies**

The test sample V₂O₅ powder was divided into two parts. One part of V₂O₅ powder sample was received the Consciousness Energy Healing Treatment (the Trivedi Effect®) remotely under standard laboratory conditions for 3 minutes by the renowned Biofield Energy Healer, Gopal Nayak, India, known as the treated V₂O₅ sample. The other part of V₂O₅ powder sample was treated with a “sham” healer considered as a control sample. The “sham” healer did not have any idea about the Consciousness Energy Healing Treatment. After the treatment, both the V₂O₅ samples were kept in sealed conditions and characterized using PXRD and PSA analytical techniques.

**Characterization**

The PXRD analysis of V₂O₅ powder samples was performed with the help of Rigaku MiniFlex-II Desktop X-ray diffractometer (Japan) [25,26]. The average size of crystallites was calculated from PXRD data using the Scherrer’s formula (1)

\[ G = \frac{k \lambda}{\beta \cos \theta} \]  

Where G is the crystallite size in nm, k is the equipment constant, \( \lambda \) is the radiation wavelength, \( \beta \) is the full-width at half maximum, and \( \theta \) is the Bragg angle [27]. Similarly, the PSA of V₂O₅ was performed with the help of Malvern Mastersizer 2000 (UK) using the wet method [28,29]. The % change in peak intensity, crystallite size, particle size, and specific surface area of the Consciousness Energy Healing Treated V₂O₅ sample was calculated compared with the control sample using the following equation 2:

\[ \% \text{ change} = \left( \frac{\text{Treated} - \text{Control}}{\text{Control}} \right) \times 100 \]  

**Results and Discussion**

**Powder X-ray diffraction (PXRD) analysis**

![Figure 1: PXRD diffractograms of the control and consciousness energy healing treated V₂O₅.](image)
The diffractograms of the control and Consciousness Energy Treated $\text{V}_2\text{O}_5$ powder showed sharp and intense peaks (Figure 1) indicated that both the samples were crystalline in nature. The PXRD diffractograms of the control and Consciousness Energy Healing Treated $\text{V}_2\text{O}_5$ samples showed the highest peak intensity at 20 equal to 20.53$^\circ$ and 20.36$^\circ$, respectively (Table 1 & 2). Overall the peak intensities of the Consciousness Energy Healing Treated $\text{V}_2\text{O}_5$ were significantly altered in the range from -14.29% to 54.05% compared to the control sample (Table 1, entry 1-15). Similarly, the crystallite sizes of the treated $\text{V}_2\text{O}_5$ were significantly altered in the range from -13% to 111.48% compared to the control sample. However, the average crystallite size of the treated $\text{V}_2\text{O}_5$ (585.74) was significantly increased by 18.08% compared with the control sample (496.04). The alteration in the crystallite sizes and peak intensities significantly of the Consciousness Energy Healing Treated $\text{V}_2\text{O}_5$ might have altered the crystal morphology compared with the control sample. If the crystal morphology change, the peak intensity of each diffraction face on the crystalline compound also changes [30], and alterations in the XRD pattern provide the proof of polymorphic transitions [31,32]. From the experimental results, it can be assumed that a new polymorphic form of $\text{V}_2\text{O}_5$ has been produced due to Trivedi Effect via the mediation of neutrino oscillation [7]. The new polymorphic forms of a crystal have a substantial impact on the physicochemical properties which are different from the original one [33,34]. Thus, the Consciousness Energy Healing Treated $\text{V}_2\text{O}_5$ would be better for industrial use.

**Table 1**: PXRD data for the control and consciousness energy healing treated $\text{V}_2\text{O}_5$.

| Entry No. | Bragg angle ($^{\circ}$2$\theta$) | Peak Intensity (%) | Crystallite size (G, nm) |
|-----------|----------------------------------|--------------------|--------------------------|
|           | Control | Treated | Control | Treated | % Change | Control | Treated | % Change |
| 1         | 15.59   | 15.42   | 53.8    | 51.9    | -3.53     | 486     | 504     | 0.61     |
| 2         | 20.53   | 20.36   | 199     | 209     | 5.03      | 427     | 507     | -9.38    |
| 3         | 21.95   | 21.78   | 56.7    | 57      | 0.53      | 423     | 499     | -13      |
| 4         | 26.37   | 26.19   | 124     | 119     | -4.03     | 523     | 595     | 3.48     |
| 5         | 32.57   | 32.42   | 50.6    | 45.4    | -10.28    | 592     | 476     | 0.87     |
| 6         | 33.49   | 33.39   | 12.3    | 11.9    | -3.25     | 581     | 753     | 14.22    |
| 7         | 34.53   | 34.35   | 47.6    | 46.9    | -1.47     | 650     | 568     | 19.28    |
| 8         | 41.46   | 41.28   | 27      | 34.6    | 28.15     | 524     | 567     | 3.93     |
| 9         | 45.7    | 45.51   | 22.7    | 22.6    | -0.44     | 592     | 581     | 32.79    |
| 10        | 47.51   | 47.38   | 42      | 36      | -14.29    | 769     | 656     | 62.63    |
| 11        | 51.43   | 51.23   | 40.2    | 43      | 6.97      | 674     | 670     | 19.9     |
| 12        | 55.88   | 55.68   | 11.1    | 17.1    | 54.05     | 731     | 658     | 20.45    |
| 13        | 61.3    | 61.13   | 20.3    | 22.3    | 9.85      | 615     | 554     | 7.53     |
| 14        | 62.25   | 62.12   | 18.9    | 23.9    | 26.46     | 747     | 654     | 2.36     |
| 15        | 72.43   | 72.32   | 10      | 14.2    | 42        | 775     | 467     | 111.48   |
| 16        | Average crystallite size           |                     | 496.04  | 585.74   | 18.08    |

**Table 2**: Particle size distribution of the control and consciousness energy healing treated $\text{V}_2\text{O}_5$.

| Parameter          | $d_{10}$ ($\mu$m) | $d_{50}$ ($\mu$m) | $d_{90}$ ($\mu$m) | D (4,3) ($\mu$m) | SSA (m$^2$/g) |
|--------------------|-------------------|-------------------|-------------------|-----------------|---------------|
| Control            | 15.57             | 49.76             | 207.39            | 83.5            | 0.239         |
| Biofield Energy    | 11.17             | 42.99             | 191.42            | 74.94           | 0.393         |
| Treated            |                   |                   |                   |                 |               |
| Percent change (%) | -28.27            | -13.6             | -7.7              | -10.25          | 64.44         |

$d_{10}$, $d_{50}$, and $d_{90}$: particle diameter corresponding to 10%, 50%, and 90% of the cumulative distribution, D (4,3): the average mass-volume diameter, and SSA: the specific surface area.

**Particle Size Analysis (PSA)**

The particle size distribution analysis of both the control and Consciousness Energy Healing Treated $\text{V}_2\text{O}_5$ powder was performed and the data are presented in Table 2. The particle size values in the Consciousness Energy Healing Treated $\text{V}_2\text{O}_5$ were significantly decreased at $d_{10}$, $d_{50}$, and D (4,3) by 28.27%, 13.6%, 7.7%, and 10.25%, respectively compared to the control sample. Thus, the specific surface area of Consciousness Energy Healing Treated $\text{V}_2\text{O}_5$ powder (0.393 m$^2$/g) was significantly increased by 64.44% compared with the control sample (0.239 m$^2$/g). The results suggested that the Consciousness Energy Healing Treatment might be acting like a quantum of energy for cracking the larger particle into the smaller one and hence increased the surface area of $\text{V}_2\text{O}_5$ powder compared to the control sample. Incising the surface area might increase the solubility and dissolution rate [35] of the Consciousness Energy Healing Treated $\text{V}_2\text{O}_5$ and would be better for the industrial applications.
Conclusion

The Trivedi Effect®-Consciousness Energy Healing Treatment showed significant effects on the peak intensities, crystallite size, particle size, surface area, and thermal properties of the V₂O₅ powder. The PXRD peak intensities of the Consciousness Energy Healing Treated V₂O₅ were significantly altered in the range from -14.29% to 54.05% compared to the control sample. Similarly, the crystallite sizes of the Consciousness Energy Healing Treated V₂O₅ were significantly altered in the range from -13% to 114.48% compared to the control sample. However, the average crystallite size of the Consciousness Energy Healing Treated V₂O₅ was significantly increased by 18.08% compared with the control sample. The particle size values in the Consciousness Energy Healing Treated V₂O₅ were significantly decreased by 28.27% (d_{10}), 13.6% (d_{50}), 7.7% (d_{90}), and 10.25% (D (4,3)) compared to the control sample. Thus, the specific surface area of Consciousness Energy Healing Treated V₂O₅ powder was significantly increased by 64.44% compared with the control sample. The results concluded that the Consciousness Energy Healing Treatment might have generated a new polymorphic form of V₂O₅ which would improve the solubility, appearance due to larger crystallite/particle size and reduced surface area compared to the control sample. The treated V₂O₅ would also be useful for the industrial applications, i.e., bolometers and microbolometer arrays for thermal imaging, ethanol sensor, redox batteries for energy storage, etc.

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