

# Assessment of the Effect of Consciousness Energy Healing Treatment on Physicochemical and Thermal Properties of Chromium (VI) Oxide

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## Abstract

Chromium TriOxide ( $\text{CrO}_3$ ) is an inorganic compound which has many industrial applications, but it is very hygroscopic, toxic and a powerful oxidizer. The objective of this study was to evaluate the impact of the Trivedi Effect<sup>®</sup> (Consciousness Energy Healing Treatment) on the physicochemical and thermal properties of  $\text{CrO}_3$  using modern analytical techniques. The  $\text{CrO}_3$  test sample was separated into two parts. One part of the test sample was called as a control sample (no Biofield Energy Treatment was provided), while the second part of chromium trioxide sample received the Consciousness Energy Healing Treatment remotely by a well-known Biofield Energy Healer, Alice Branton and termed as a treated sample. The powder XRD peak intensities and crystallite sizes of the treated  $\text{CrO}_3$  were significantly altered ranging from -63.06% to 357.95% and -41.82% to 420%, respectively; thus, the average crystallite size was significantly increased by 70.46% compared with the control sample. The particle size values of the treated  $\text{CrO}_3$  were significantly increased by 434.85% ( $d_{10}$ ), 17.61% ( $d_{50}$ ), and 19.72%  $\{D(4,3)\}$ , respectively; therefore, the specific surface area was significantly decreased by 80.56% compared with the control. The latent heat of fusion of the treated  $\text{CrO}_3$  was significantly increased by 33.18% compared with the control sample. The experimental results indicated that the Trivedi Effect<sup>®</sup> -Consciousness Energy Healing Treatment might include a new polymorphic form of  $\text{CrO}_3$  which would show better powder flowability and lower solubility. It may lower the absorption, bioavailability and toxicity of  $\text{CrO}_3$  on inhalation, ingestion, chronic exposure, contact to skin and eye, and aggravation of pre-existing conditions. Along with the Biofield Energy Treated  $\text{CrO}_3$  would be very useful to the manufacturing industry.

**Keywords:** Chromium trioxide; The Trivedi Effect<sup>®</sup>; Consciousness energy healing treatment; PXRD; Particle size; Surface area; DSC

## Introduction

Chromium (VI) oxide ( $\text{CrO}_3$ ) is an inorganic compound. Chemically it is an acidic anhydride of chromic acid<sup>[1]</sup>. The compound is a dark-purple solid while anhydrous and bright orange when wet or dissolves in water. Chromium trioxide is highly hygroscopic and a powerful oxidiser, which will ignite organic materials on contact<sup>[2]</sup>. Chromium trioxide is typically employed for chrome plating, which affects the plating process without reacting with the trioxide. It generates passivating chromate films by reacting with zinc, cadmium, and other metals to resist corrosion<sup>[3]</sup>. Synthetic rubies manufacture taking chromium trioxide<sup>[4]</sup>. It is also used aerospace applications and also the preferred stripping agent of anodic coatings<sup>[2]</sup>. Chromium trioxide is highly corrosive, toxic, and carcinogenic. It causes potential health effects on inhalation, ingestion, contact with the skin and eye, chronic exposure, and aggravation of pre-existing conditions<sup>[5]</sup>. It was observed that the Trivedi Effect<sup>®</sup> -Biofield Energy Healing Treatment has a con-

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siderable impact on the intrinsic physicochemical properties of various living and non-living objects<sup>[6-9]</sup>. The Trivedi Effect<sup>®</sup> is a natural and only scientifically established phenomenon in which an individual can harness this inherently intelligent energy from the “Universe” and transfer it anywhere on the planet through the possible mediation of neutrinos<sup>[10]</sup>. Every living organism possesses unique para-dimensional electromagnetic field around the body which generated from the continuous movement of the electrically charged particles (ions, cells, etc.) inside the body known as the “Biofield” (Putative Energy Field). Biofield based Energy Healing Therapies have been reported with significant outcomes against various disease conditions<sup>[11]</sup>. The National Institutes of Health (NIH) and the National Center for Complementary and Alternative Medicine (NCCAM) recommend and included the Energy Therapy under Complementary and Alternative Medicine (CAM) category, which has been accepted by most of the U.S. population with many advantages<sup>[12,13]</sup>. In this regards, the Consciousness Energy Healing Treatment (the Trivedi Effect<sup>®</sup>) has been extensively reported with amazing results in the field of agriculture<sup>[14,15]</sup>, biotechnology<sup>[16,17]</sup>, microbiology<sup>[18,19]</sup>, medical science<sup>[20,21]</sup>, material science<sup>[22,23]</sup>, organic chemistry<sup>[24,25]</sup>, and nutraceutical/ pharmaceutical sciences<sup>[26,27]</sup>. It is also experimentally found altering the bioavailability of pharmaceutical/ nutraceutical compounds<sup>[28-30]</sup>. Looking at the amazing results of the Trivedi Effect<sup>®</sup> -Consciousness Energy Healing Treatment on various objects, the current research work has been designed to evaluate the impact of the Trivedi Effect<sup>®</sup> on chromium trioxide using Powder X-Ray Diffraction (PXRD), Particle Size Analysis (PSA), and Differential Scanning Calorimetry (DSC) analytical techniques.

## Materials and Methods

**Chemicals and Reagents:** The chromium (VI) oxide (CrO<sub>3</sub>) powder was purchased from Sigma Aldrich, India; however, the additional chemicals used in the experiments were purchased in India.

**Consciousness energy healing treatment strategies:** The chromium trioxide powder was the test item and divided into two parts. One part of the chromium trioxide sample was considered as a control/untreated sample, which did not provide the Biofield Energy Treatment. Consequently, the second part of the test item was treated with the Trivedi Effect<sup>®</sup> remotely under standard laboratory conditions for 3 minutes by the renowned Biofield Energy Healer, Alice Branton, USA, and known as the Biofield Energy Treated sample. Moreover, the control sample was treat-

ed with a “sham” healer; but, the “sham” healer was ignorant about the Biofield Energy Treatment (the Trivedi Effect<sup>®</sup>). After the treatment, the treated and untreated chromium trioxide samples were kept in sealed conditions and characterized using spectroscopic and calorimetric analytical techniques.

## Characterization

**Powder X-ray diffraction (PXRD) analysis:** The PXRD analysis of chromium trioxide was performed with the help of Rigaku MiniFlex-II Desktop X-ray diffractometer (Japan)<sup>[31,32]</sup>. The average size of individual crystallites was calculated from PXRD data using the Scherrer’s formula (1):

$$G = k\lambda/\beta\cos\theta \quad (1)$$

Where  $k$  is the equipment constant (0.94),  $G$  is the crystallite size in nm,  $\lambda$  is the radiation wave length (0.154056 nm for K $\alpha$ 1 emission),  $\beta$  is the full-width at half maximum (FWHM), and  $\theta$  is the Bragg angle<sup>[33]</sup>.

The % change in crystallite size ( $G$ ) of chromium trioxide was calculated using the following equation 2:

$$\% \text{ change in crystallite size} = \frac{G_{\text{Treated}} - G_{\text{Control}}}{G_{\text{Control}}} \times 100 \quad (2)$$

Where  $G_{\text{Control}}$  and  $G_{\text{Treated}}$  are the crystallite size of the control and Biofield Energy Treated samples, respectively.

**Particle Size Analysis (PSA):** The particle size analysis of chromium trioxide was performed on Malvern Master sizer 2000, from the UK<sup>[34,35]</sup>. The % change in particle size ( $d$ ) was calculated using the following equation 3:

$$\% \text{ change in particle size} = \frac{d_{\text{Treated}} - d_{\text{Control}}}{d_{\text{Control}}} \times 100 \quad (3)$$

Where  $d_{\text{Control}}$  and  $d_{\text{Treated}}$  are the particle size ( $\mu\text{m}$ ) for at below 10% level ( $d_{10}$ ), 50% level ( $d_{50}$ ), and 90% level ( $d_{90}$ ) of the control and Biofield Energy Treated samples, respectively.

The % change in surface area ( $S$ ) was calculated using the following equation 4:

$$\% \text{ change in surface area} = \frac{S_{\text{Treated}} - S_{\text{Control}}}{S_{\text{Control}}} \times 100 \quad (4)$$

Where  $S_{\text{Control}}$  and  $S_{\text{Treated}}$  are the surface area of the control and Biofield Energy Treated chromium trioxide, respectively.

**Differential Scanning Calorimetry (DSC):** The DSC analysis of chromium trioxide was performed with the help of DSC Q200, TA Instruments<sup>[34,35]</sup>. The % change in melting point ( $T$ ) was calculated using the following equation 5:

$$\% \text{ change in melting point} = \frac{T_{\text{Treated}} - T_{\text{Control}}}{T_{\text{Control}}} \times 100 \quad (5)$$

Where  $T_{\text{Control}}$  and  $T_{\text{Treated}}$  is the melting point of the control and treated samples, respectively.

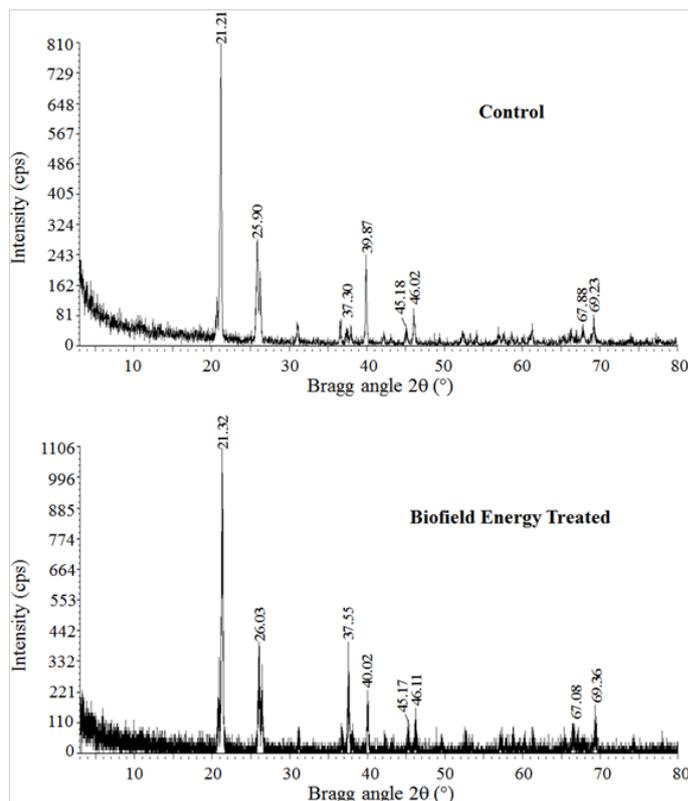
The % change in the latent heat of fusion ( $\Delta H$ ) was calculated using the following equation 6:

$$\% \text{ change in latent heat of fusion} = \frac{\Delta H_{\text{Treated}} - \Delta H_{\text{Control}}}{\Delta H_{\text{Control}}} \times 100 \quad (6)$$

Where  $\Delta H_{\text{Control}}$  and  $\Delta H_{\text{Treated}}$  are the latent heat of fusion of the control and treated chromium trioxide, respectively.

## Results and Discussion

**Powder X-ray Diffraction (PXRD) Analysis:** Many sharp and intense peaks were observed in the PXRD diffractograms of the control and Biofield Energy Treated chromium trioxide (Figure 1), which indicated that both the samples were crystal line. The highest peak intensity of both the samples showed at  $2\theta$  equal to  $21.3^\circ$  (Table 1, entry 1). The overall peak intensities of the Biofield Energy Treated chromium trioxide were significantly altered ranging from -63.06% to 357.95% compared with the control sample. Similarly, the crystallite sizes of the treated chromium trioxide were significantly altered ranging from -41.82% to 420.00% compared to the control chromium trioxide. Overall, the average crystallite size of the Biofield Energy Treated chromium trioxide (593.43 nm) was significantly increased by 70.46% compared with the control sample (348.14 nm).



**Figure 1:** PXRD diffractograms of the control and Biofield Energy Treated chromium trioxide.

The results indicated significant variations in the crystallite sizes and peak intensities of the Biofield Energy Treated sample compared to the control sample. As per the literature, the peak intensity of any diffraction face on the crystalline compound changes according to the crystal morphology<sup>[36]</sup>, and alterations in the PXRD pattern provide the proof of polymorphic transitions<sup>[37,38]</sup>. The Biofield Energy Healing Treatment probably produced the new polymorphic form of chromium trioxide with the help of Consciousness Energy *via* neutrino oscillations<sup>[10]</sup>. Different polymorphic forms of a compound have significant effects on their physicochemical and thermodynamic

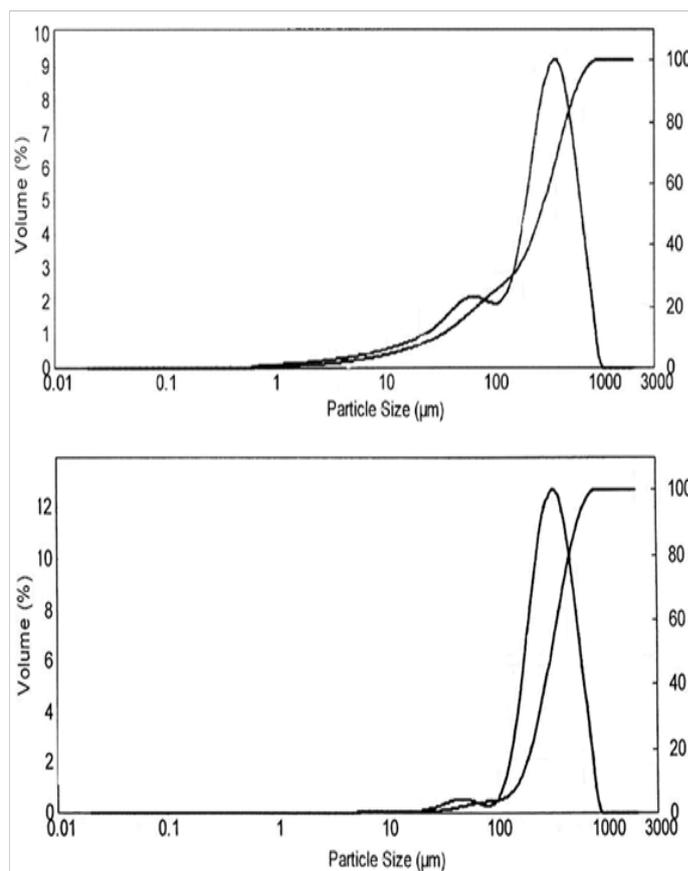
**Table 1:** PXRD data for the control and Biofield Energy Treated chromium trioxide.

Entry No.	Bragg angle ( $2\theta$ )		Peak Intensity (%)			Crystallite size (G, nm)		
	Control	Treated	Control	Treated	% change <sup>a</sup>	Control	Treated	% change <sup>b</sup>
1	21.21	21.32	143	148	3.50	435	342	-21.38
2	25.9	26.03	76	50.3	-33.82	297	390	31.31
3	37.3	37.55	8.8	40.3	357.95	130	676	420.00
4	45.18	45.17	6	6.8	13.33	159	416	161.64
5	46.02	46.11	9.4	8.9	-5.32	142	410	188.73
6	67.88	67.08	11.1	4.1	-63.06	265	1333	403.02
7	69.23	69.36	11.1	14.5	30.63	1009	587	-41.82
8	Average crystallite size					348.14	593.43	70.46

<sup>a</sup>denotes the percentage change in the peak intensity of Biofield Energy Treated sample with respect to the control sample; <sup>b</sup>denotes the percentage change in the crystallite size of Biofield Energy Treated sample with respect to the control sample.

properties like melting point, energy, stability, and especially solubility<sup>[39,40]</sup>. Therefore, it can be assumed that the Trivedi Effect<sup>®</sup> Treated chromium trioxide would be better to use in the industry as a raw material for manufacturing.

**Particle Size Analysis (PSA):** The PSA analysis of both the control and Biofield Energy Treated chromium trioxide were performed and the distribution curves are presented in Figure 2. The particle size distribution curve of the treated chromium trioxide sample was slightly different compared to the control sample (Figure 2). The particle size values of the control chromium trioxide sample at  $d_{10}$ ,  $d_{50}$ ,  $d_{90}$ , and  $D(4,3)$  were 31.61  $\mu\text{m}$ , 278.84  $\mu\text{m}$ , 579.07  $\mu\text{m}$ , and 292.76  $\mu\text{m}$ , respectively. Similarly, the particle sizes of the treated chromium trioxide at  $d_{10}$ ,  $d_{50}$ ,  $d_{90}$ , and  $D(4,3)$  were 169.07  $\mu\text{m}$ , 327.93  $\mu\text{m}$ , 575.92  $\mu\text{m}$ , and 350.51  $\mu\text{m}$  respectively. Therefore, the particle size values in Biofield Energy Treated chromium trioxide was significantly increased at  $d_{10}$ ,  $d_{50}$ , and  $D(4,3)$  by 434.85 %, 17.6%, and 19.72%, respectively compared to the control sample. However, at  $d_{90}$  the particle size was slightly decreased by 0.54% in the Biofield Energy Treated sample compared to the control sample. The specific surface area of Biofield Energy Treated chromium trioxide (0.126  $\text{m}^2/\text{g}$ ) was significantly decreased by 80.56% compared with the control sample (0.025  $\text{m}^2/\text{g}$ ). Hence, it can be assumed that the Consciousness Energy Healing Treatment might act as an external force for increasing the particle size of the  $\text{CrO}_3$  sample, hence decreased the surface area. Increased in the particle size of the compound may help in enhancing the appearance, shape, and flowability of the compound<sup>[41,42]</sup>. Thus, the Biofield Energy Treatment might improve the powder flowability, and lower solubility hence lower the absorption, bioavailability, and toxicity of chromium trioxide on inhalation, ingestion, contact to skin and eye, chronic exposure, and aggravation of pre-existing conditions.



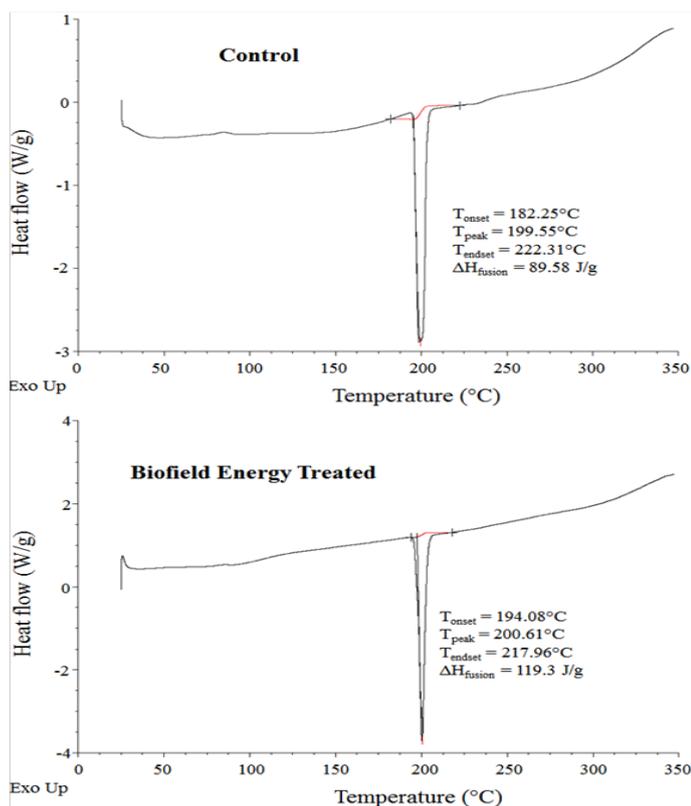
**Figure 2:** Particle size distribution curve of the control and Biofield Energy Treated chromium trioxide.

**Table 2:** Particle size distribution of the control and Biofield Energy Treated chromium trioxide.

Parameter	$d_{10}$ ( $\mu\text{m}$ )	$d_{50}$ ( $\mu\text{m}$ )	$d_{90}$ ( $\mu\text{m}$ )	$D(4,3)$ ( $\mu\text{m}$ )	SSA ( $\text{m}^2/\text{g}$ )
Control	31.61	278.84	579.07	292.76	0.126
Biofield Treated	169.07	327.93	575.92	350.51	0.025
Percent change* (%)	434.85	17.61	-0.54	19.72	-80.56

$d_{10}$ ,  $d_{50}$ , 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. \*denotes the percentage change in the Particle size distribution of the Biofield Energy Treated sample with respect to the control sample.

**Differential Scanning Calorimetry (DSC) analysis:** The thermal analysis of chromium trioxide has been performed to characterize the thermal behavior of both control and Biofield Energy Treated sample (Figure 3). The DSC thermograms of the control and the treated  $\text{CrO}_3$  showed the sharp endothermic peak at 199.55 $^{\circ}\text{C}$  and 200.61 $^{\circ}\text{C}$ , respectively (Table 3). The melting point of the Biofield Energy Treated  $\text{CrO}_3$  was slightly increased by 0.53% compared with the control sample (Table 3).



**Figure 3:** DSC thermograms of the control and Biofield Energy Treated chromium trioxide.

The latent heat of fusion ( $\Delta H_{\text{fusion}}$ ) the Biofield Energy Treated chromium trioxide (119.3 J/g) was significantly increased by 33.18% compared with the control sample (89.58 J/g) (Table 3). The change in the latent heat of fusion can be accredited to the disrupted molecular chains and the crystal structure<sup>[43]</sup>. Therefore, it can be presumed that Alice’s Biofield Energy Treatment (the Trivedi Effect®) may be responsible for the disruption the molecular chains and crystal structure of  $\text{CrO}_3$  which would improve the thermal stability of the treated sample compared with the control sample.

**Table 3:** DSC data for both control and Biofield Energy Treated samples of chromium trioxide.

Sample	Melting point (°C)	$\Delta H(\text{J/g})$
Control Sample	199.55	89.58
Biofield Energy Treated	200.61	119.3
% Change*	0.53	33.18

$\Delta H$ : Latent heat of fusion, \*denotes the percentage change of the Biofield Energy Treated chromium trioxide with respect to the control sample.

### Conclusions

The Trivedi Effect® -Consciousness Energy Healing Treatment has a significant impact on the crystallite size, particle size,

surface area, and thermal properties of chromium trioxide. The PXRD peak intensities of the Consciousness Energy Healing Treated chromium trioxide was significantly altered ranging from -63.06% to 357.95% compared with the control sample. Similarly, the crystallite sizes of the Consciousness Energy Healing Treated sample was significantly altered ranging from -41.82% to 420% compared to the control sample. Overall, the average crystallite size of the Consciousness Energy Healing Treated chromium trioxide was significantly increased by 70.46% compared with the control sample. The particle size values of the Consciousness Energy Healing Treated chromium trioxide were significantly increased at  $d_{10}$ ,  $d_{50}$ , and  $D(4,3)$  by 434.85%, 17.61%, and 19.72%, respectively and slightly decreased at  $d_{90}$  by 0.54% compared to the control sample. Hence, the specific surface area of the Consciousness Energy Healing Treated chromium trioxide was significantly decreased by 80.56% compared with the control sample. The  $\Delta H_{\text{fusion}}$  of the Consciousness Energy Healing Treated chromium trioxide was significantly increased by 33.18% compared with the control sample. The experimental results indicated that the Trivedi Effect® -Consciousness Energy Healing Treatment might generate a new polymorphic form of chromium trioxide which would be better powder flowability and lower solubility, hence lower the absorption, bioavailability, and toxicity of chromium trioxide on inhalation, ingestion, contact to skin and eye, chronic exposure, and aggravation of pre-existing conditions. Besides, the Biofield Energy Treated chromium trioxide would be very useful in the manufacturing industry using it as a raw material.

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