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Synthesis of Nanoparticles in Silicea 1M by Potentized UV Solvent base after Pulverization with Sugar of Milk

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Abstract
Through this research work synthesizing the Nanoparticles in Silicea 1M with the help of UV- base under Pulverization Sugar of Milk. Analysis were done by SEM (Scanning Electron Microscope) and EDS, UV- visible spectroscopy to determine the various microstructures in micron.

Keywords: Pulverization, silicea 1M, EDS, SEM (Scanning electron microscope), UV- visible spectroscopy

Introduction

Nanotechnology is the study of manipulating matter at the scale of one billionth of a meter (10 − 9 m = 1 nm), and it deals with matter at that scale. Molecular and atomic scale. The most basic building block of a nanostructure is a nanoparticle, which is larger than an atom or a simple molecule, which are subject to quantum mechanics, but much smaller than the world of common things, which are described by Newton's laws of motion. The National Nanotechnology Initiative (NNI) was established by the US in 2000, and in 2001, numerous nanotechnology projects were launched across almost all US Departments and Agencies [1]. This unique cup is the sole intact historical example of dichroic glass, a particularly peculiar kind of glass that changes color when exposed to light. When exposed to light, the opaque green cup transforms into a brilliant translucent red. Through it internally, thus that light strikes the cup at a 90° angle to the direction of view. The glass's analysis showed that it contains a very small amount of miniscule it has these peculiar optical characteristics due to metal crystals of Ag and Au in an approximate molar ratio of 14:1 (~ 70 nm). This material exhibits unique optical properties attributed to the presence of metal crystals of silver and gold in an approximate molar ratio of 14:1, with a size of around 70 nm. The unique optical characteristics of the Lycurgus Cup are attributed to the presence of these nanocrystals, which create its distinctive color effects. Visitors can admire the cup, currently housed in the British Museum [2].

Up until the middle Ages, soluble gold was primarily renowned for its remarkable healing properties against a variety of ailments, including heart and venereal diseases, dysentery, epilepsy, and tumors; it also played a role in diagnosing syphilis. Daniel and Astruc have provided a comprehensive overview of the history of nanoparticles from ancient times through the middle Ages. The first publication dedicated to colloidal gold was authored in 1618 by the philosopher and physician Francisci Antonii. This work contains extensive details regarding the creation of colloidal gold sols and their medicinal applications, including several successful case studies. It was noted that soluble gold was first documented in Egypt and China around the fifth or fourth century B.C. Conversely, the industrial production of stained glass utilizing colloidal particles was pioneered by Kunckel in the seventeenth century (1676). He also released a book that featured a chapter on “drinkable gold,” which described a neutral, slightly pink solution containing metallic gold that was believed to possess healing properties for various diseases. He concluded that gold must be present in aqueous solutions at a level of dilution that renders it invisible to the naked eye. The “Purple of Cassius,” a colorant used in glass, was a colloid formed from gold particles and tin dioxide, and it gained significant popularity in the seventeenth century.

In 1718, Helcher published a comprehensive treatise on colloidal gold, in which he asserted that the addition of boiled starch to the preparation of drinkable gold significantly improved its stability. These concepts were widely accepted in the eighteenth century, as evidenced by a French chemical dictionary from 1769, which stated under the entry for "or potable" that drinkable gold consisted of gold in its elemental form, albeit in a highly subdivided state suspended in liquid. In 1794, Fuhlame documented in a book her experience of dyeing silk with colloidal gold [3-7].

Materials & Methodology

- **Type of study:** Nanotechnology
- **Site of study:** PIHR (Parul Institute of Homoeopathy & Research), Micro Nano laboratory, Parul University, Vadodara, Gujarat
- **Duration of Study:** 15 Days
- **Medicinal product:** Silicea 1M (Procure from SBL Pharmaceutical Company)
- **Vehicle:** Distilled water, Sugar of Milk, Rectified spirit
- Equipments: Beaker, Glass rod, Spatula, Physical balance, Hot water bath, Electric potentizer machine, Electric Triturator machine, pestle, Dropper
- **Synthesizer:** Potentized UV Base
- **Investigational tool:** SEM (Scanning electron microscope), UV- visible spectroscopy (Shimadzu Company)
- **SEM:** The Hitachi SU3800 SEM uses high-resolution characterization and analysis to deliver precise nanoscale surface information. STEM, UVD, BSE, and SE detectors are among its advanced optics and detection technologies. The SEM provides comprehensive information on specimen surface morphology when used in conjunction with an EDS system for elemental composition investigation.

Procedure

There are following steps involved;

- **1st step:** Sterile all the laboratory equipment's by strong alcohol and distilled water, kept under Hot air oven for atlest 10-15 minutes
- **2nd step:** Take 2-3 ml rectified spirit in UV visible spectrophotometer (Double beam) and undergoes into 10 downwards strokes by Electric potentizer machine. Thereafter it is called Potentized UV base.
- **3rd step:** Take 10 ml Silicea 1M in sterile beaker 100 ml capacity, add 50 ml distilled water and 5 ml Potentized UV Base. Afterwards mixed it gently by glass rod and said to be Silicea Potentized UV solvent base.
- **5th step:** put sample of Silicea Potentized UV solvent base under UV visible spectrophotometer (Double beam) for determine concentration of solvent system. (Given in Table no. 1.)
- **6th step:** Add 5 drops of be Silicea Potentized UV solvent base in 2 gm sugar of milk weight by mechanical balance. Mixed it by spatula and crush by sterile pestle in mortar.
- **7th step:** pulverized Silicea Potentized UV solvent base with sugar of milk (2gm) for atleast 10 minutes by electric potentizer machine
- **6th step:** Analysis were done by SEM (scanning electron microscope) and EDS Analysis in Micro Nano laboratory of Parul University by Gold coating over the sample as it is Non conducting sample.

Results

Analysis were done by SEM (Scanning electron microscope) and EDS and UV- visible spectroscopy analysis. Which are given below;

Table 1: Absorbance of potentized Silicea 1M Nano base

S. No.	Wavelength (nm)	Absorbance
1.	791.80	0.012
2.	782.00	0.013
3.	776.00	0.013

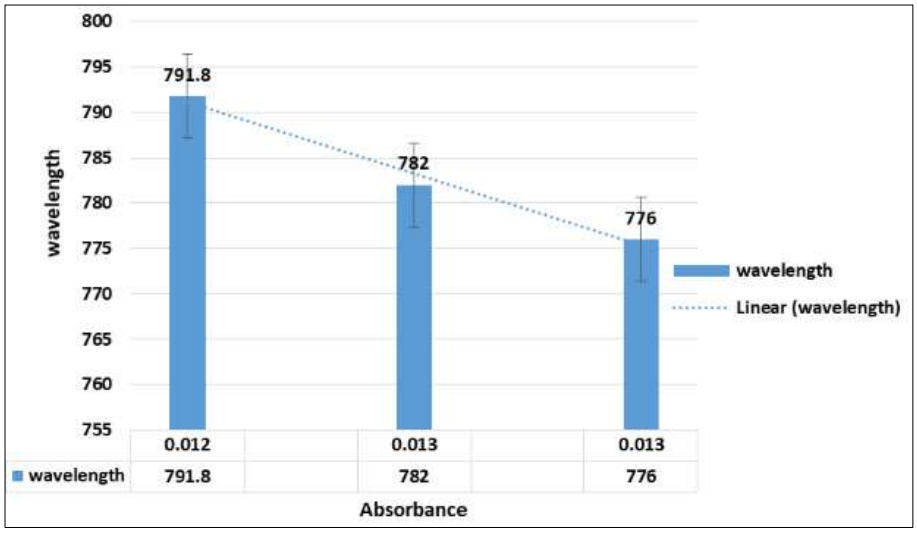

Fig 1: Potentized Silicea 1M Nano base in 1 micron

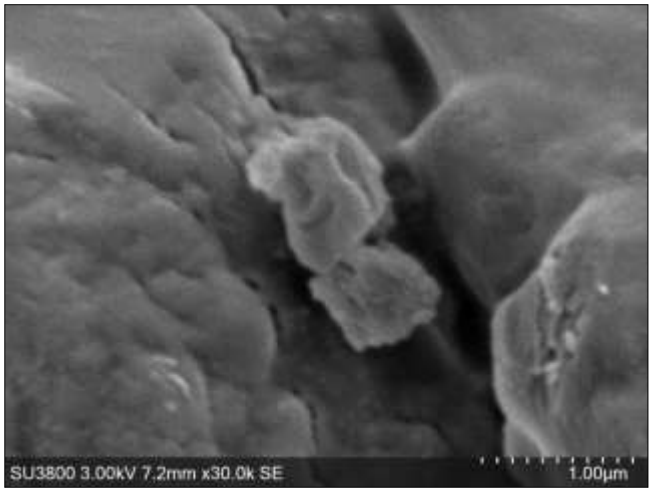

Fig 2: Potentized Silicea 1M Nano base in 1 micron

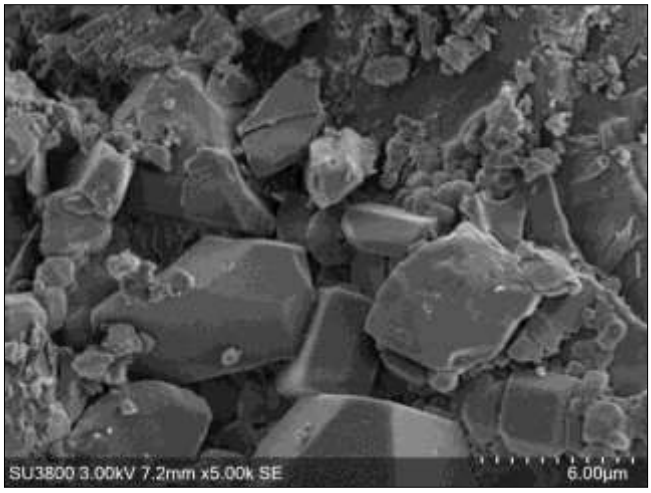

Fig 3: Potentized Silicea 1M Nano base in 6 micron

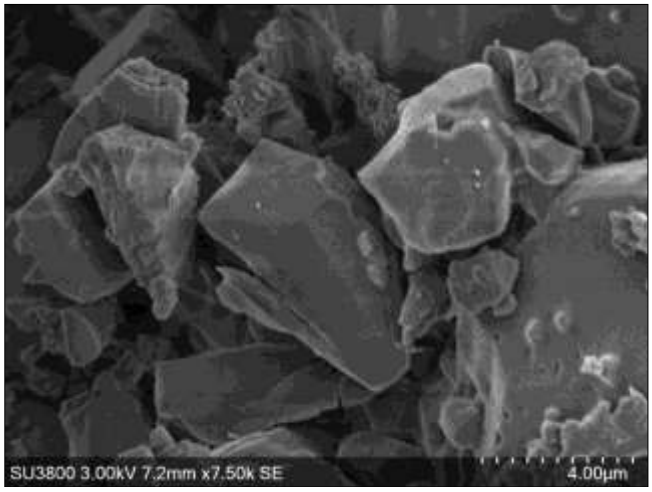

Fig 4: Potentized Silicea 1M Nano base in 4 micron

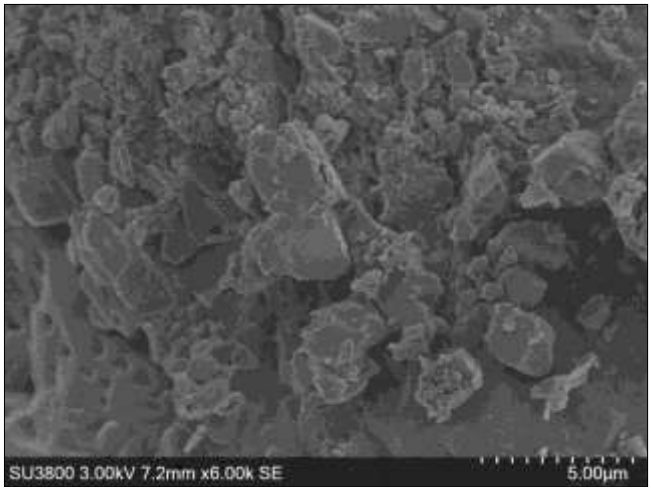

Fig 5: Potentized Silicea 1M Nano base in 5 micron

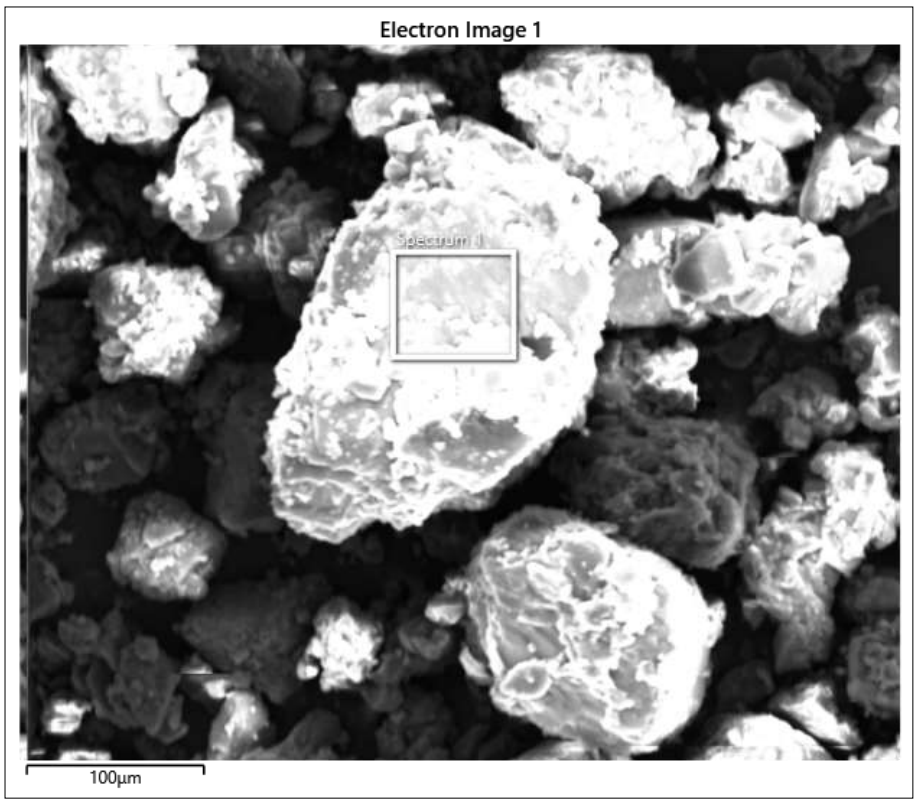

Fig 6: SEM & EDS Scanning of Potentized Silicea 1M Nano base

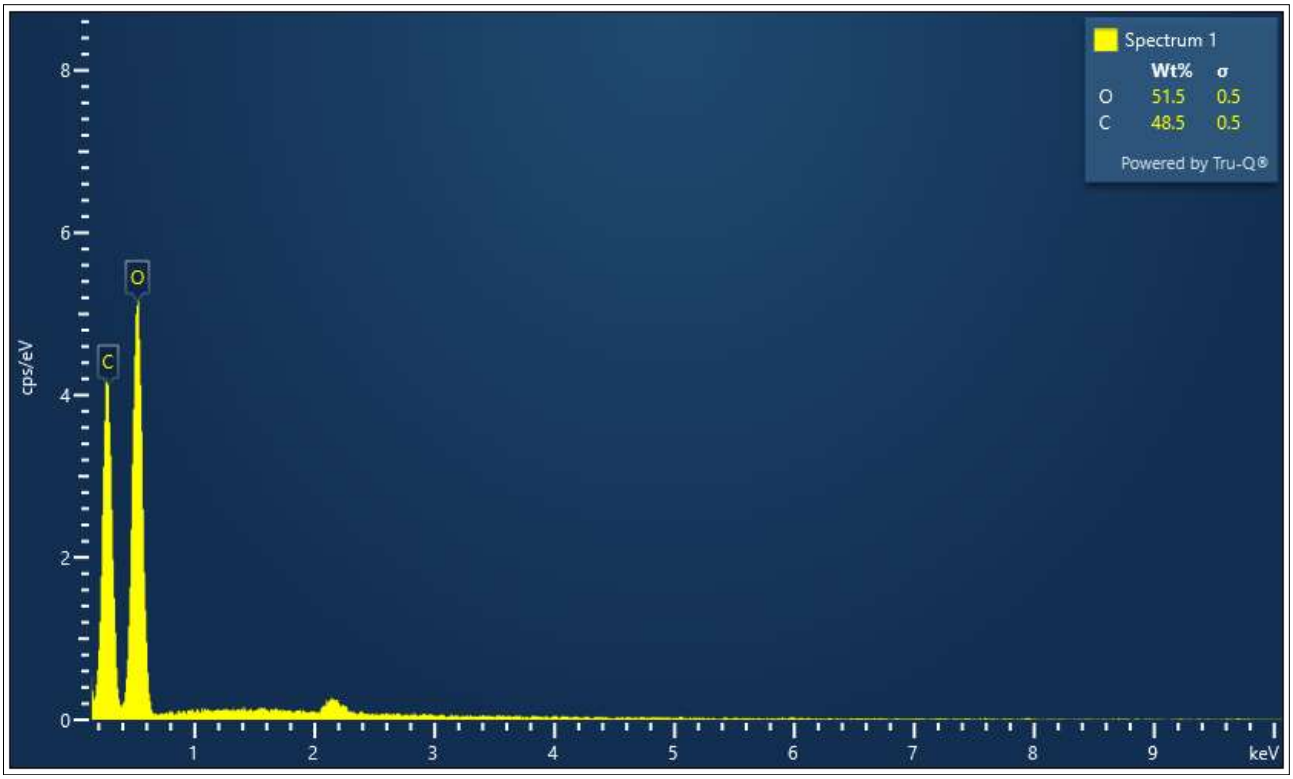

Fig 7: SEM & EDS Spectrum Scanning of Potentized Silicea 1M Nano base

Element	Signal Type	Atomic %
C	EDS	55.69
O	EDS	44.31
Total		100.00

Element	Signal Type	Wt%	Wt% Sigma
C	EDS	48.54	0.50
O	EDS	51.46	0.50
Total		100.00	

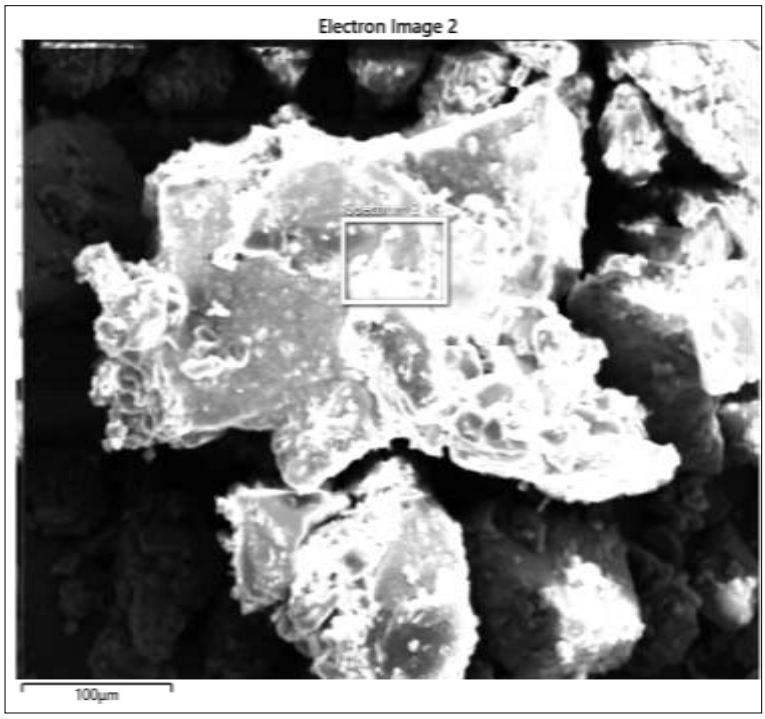

Fig 8: SEM & EDS Scanning of Potentized Silicea 1M Nano base

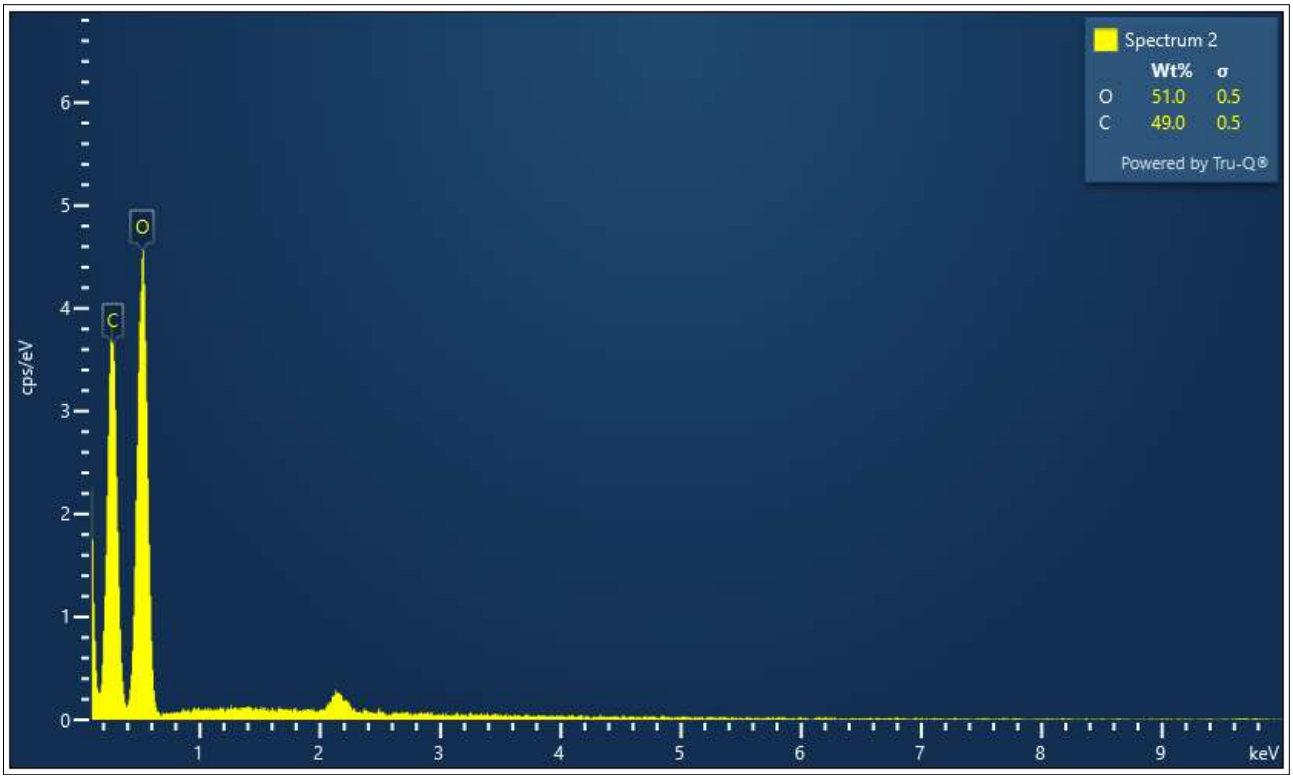

Fig 9: SEM & EDS Spectrum Scanning of Potentized Silicea 1M Nano base

Element	Signal Type	Atomic %
C	EDS	56.16
O	EDS	43.84
Total		100.00

Element	Signal Type	Wt%	Wt% Sigma
C	EDS	49.02	0.51
O	EDS	50.98	0.51
Total		100.00	

Conclusion

Successfully prepared Silicea 1M Nanoparticles by potentized UV Base after Pulverization with sugar of milk.

Acknowledgement

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Conflict of interest

No such.

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