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Research Article

Atomic force microscopy of tetraphenyl porphyrins metal complexes

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Abstract

Atomic force microscopy is now a days a powerful tool for the surface elucidation.1This technique is used to measure magnetism, friction and height of the sample under investigation. Its resolution operates in fraction of nanometer.2It operates from various contact and non-contact mode. In this paper atomic force microscopy of temicrphenyl cobalt complexes was carried on and their structure and symmetry has been elucidated. In this article AFM analysis of tetraphenyl porphyrin complex was probed. Electron capture properties of tetrophenyl porphyrins have been probed through AFM. Atomic force microscopy (AFM) is an excellent technique to explore the surface morphological features of the material. AFM analysis of the TCPPCo was performed to study the surface morphology of the compounds.

Keywords: *Atomic Force Microscopy, Aggregation of Porphyrin Molecules, Zinc Surface, Flass Surface.*

Introduction of Atomic Force Microscopy

Investigations have been performed to explore ultrashort laser irradiation effects on the surface topography as well as structural and nonlinear absorption properties of a tetraphenyl porphyrins metal complexes. For this purpose, a sample was exposed in air to 25 fs, 800 nm Ti: sapphire laser radiation at fluences ranging from 0.25 J cm−2 to 3.6 J cm−2. The Several topographical structures like bumps, explosions and nano cavities have been observed on the irradiated surface surface features, structural changes and nonlinear absorption were explored by AFM.7 shahid etal

Instruments and Method

A sample of tetraphenyl porphyrin cobalt complex was coated on Zn plate and surface results were obtained through atomic force microscopy and experiments was carried on university of engineering and technology, Lahore, Pakistan.

Figure 1: Atomic force microscopic image of tetraphenyl porphyrin cobalt complex.

Figure 2: Atomic force microscopic image of tetraphenyl porphyrin cobalt complex.

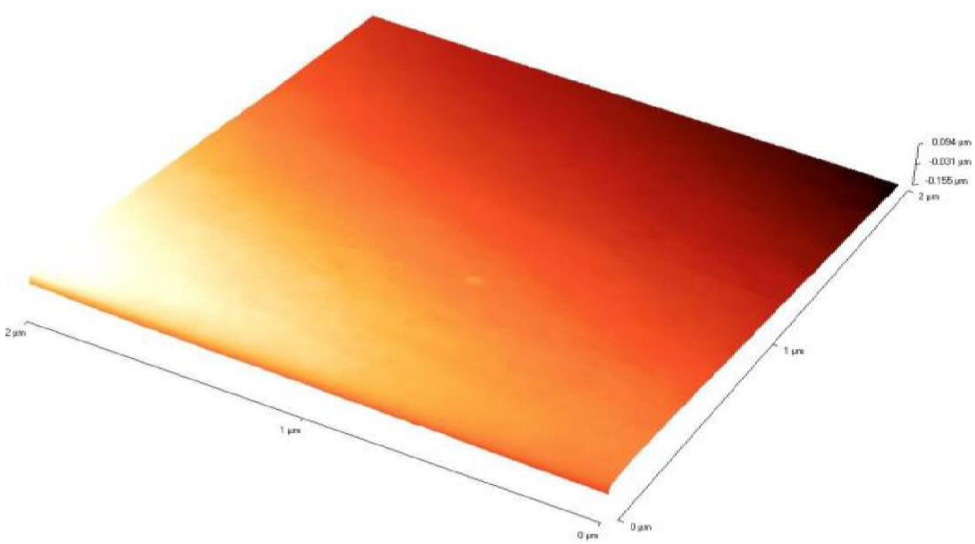

Figure 3: Atomic force microscopic image of tetraphenyl porphyrin cobalt complex.

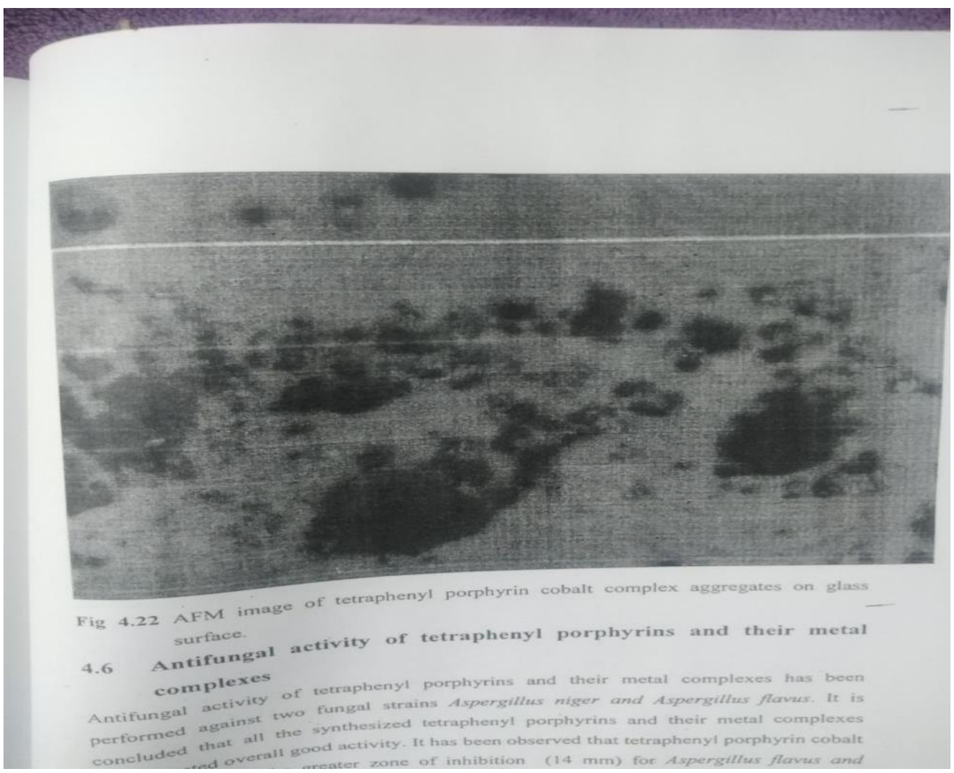

Fig 4.22 AFM image of tetraphenyl porphyrin cobalt complex aggregates on glass surface.

4.6 Antifungal activity of tetraphenyl porphyrins and their metal complexes

Antifungal activity of tetraphenyl porphyrins and their metal complexes has been performed against two fungal strains *Aspergillus niger and Aspergillus flavus*. It is concluded that all the synthesized tetraphenyl porphyrins and their metal complexes ...ted overall good activity. It has been observed that tetraphenyl porphyrin cobalt ... greater zone of inhibition (14 mm) for *Aspergillus flavus and*

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Results and Discussions

AFM analysis of the TCPPCo was performed to study the surface morphology of the compounds. AFM images of the complex are shown fig. 1 to 5. All assemblies named the "tetra phenyl porphyrins" contain the core particle (TPP). The TPP is a barrel-shaped structure, about 55 nm in diameter and average height is 60 nm. The aggregates are of increased dimension compared with the case of diameter and 40 nm in height There is a hydrogen bonding, resulting in the formation of aggregates on the surface.1 AFM images demonstrated that TPP have distinct orientations of the aggregates on surfaces. This is an important condition for nonmaterial used in sensing and catalytic properties to maintain continuity.3 The samples were prepared in water as a solvent and surface was made of glass. TPP is arranged into four tetramer pyrolle rings, organized in an α–β–β–α manner. The catalytic chamber is developed inside β rings, and the channel to the chamber leads from the gate in the middle of the external α ring. The outer surface of α ring, α face, provides an area for attachment of additional regulatory modules. The most physiologically important module is the 19S "cap", resembling a dragon's head attached to the core "trunk". Several groups imaged the stable core particles. In the most noninvasive imaging attempt, used the tapping mode AFM in liquid with porphyrins electrostatically attached to glass. By adjusting porphyrin concentration, generally in the nanomolar range, it was possible to obtain a layer of densely packed particles or a sparsely populated field41. Both top-view ("standing") and fig 1 to 6. Closed porphyrin cages protecting organic or inorganic cargo or branched nets capable to catch bioparticles belong to this group of complexes. The AFM technique has been used not only to characterize their topography with nanometer-scale resolution, but most of all to follow their assembly and test their mechanical and physicochemical properties. AFM of tetra phenyl porphyrin cobalt complex has 1 Lacy sphere with diverse filling. The 2D crystals, which are easier to form and more stable than 3D crystals, are often used for electron microscopy or AFM of membrane proteins.4 Analysis of the images revealed that the proteasomes optimized their packing in a crystal by interlocking both laterally and vertically, ring-to-waist. Contact mode AFM was used to successfully image the shear resistant 2D crystals.2 Closed porphyrin cages protecting organic or inorganic cargo or branched nets capable to catch bioparticles belong to this group of complexes. The AFM technique has been used not only to characterize their topography with nanometer-scale resolution, but most of all to follow their assembly and test their mechanical and physicochemical properties. AFM has been applied to study three basic aspects of porphyrin aggregation, morphology, their growth/assembly and mechanism of action.

Conclusion

Atomic force microscopy of tetraphenyl porphyrin metal complex was successfully probed. The results confirmed the conductive property of complex and shape and symmetry was further elaborated.

Acknowledgments

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