



## Synthesis, Spectroscopic and Theoretical Studies of Organotin(IV) and Organosilicon(IV) Complexes of Schiff bases Derived from Tryptophan and Phenylalanine

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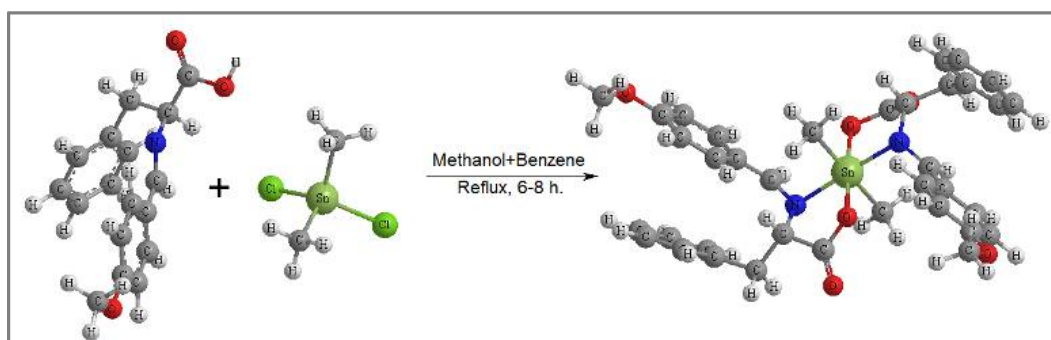
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### ABSTRACT

New organotin(IV) and organosilicon(IV) complexes have been synthesized with Schiff bases derived from tryptophan, phenylalanine alpha-amino acids. These ligands act as monobasic bidentate species and coordinate with the tin and silicon atom through the nitrogen and oxygen atom. The synthesized complexes have been characterized by various physico-chemical and spectroscopic techniques. The mode of bonding of the ligands and tin and silicon complexes have been confirmed on the basis of infrared, UV-visible, and <sup>1</sup>H, and <sup>13</sup>C NMR spectroscopic studies and probable structures have been assigned to these complexes. The optimized structural parameters such as bond length, bond angles, HOMO, LUMO orbital, electronegativity, global softness, and electrophilicity index were calculated by the methods based B3LYP on the density functional theory (DFT). The ligands and their corresponding complexes have also been screened for antibacterial activities.

### Graphical Abstract



**Keywords:** Alpha aminoacids, Organotin(IV), Organosilicon(IV) complexes, Spectroscopic studies, Schiff base, DFT calculations, Antibacterial activities.