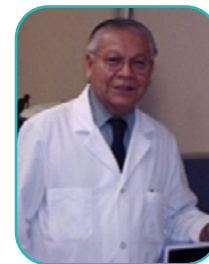


Silyl phosphite and ylide reagents to the synthesis of methylene analogs of natural polyphosphates

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Abstract

Methylene polyphosphate nucleosides are desired analogs used to investigate the role of phosphate transfer in biological systems. They may also elucidate the mechanisms of enzymatic reactions that utilize natural nucleoside polyphosphates as substrates. The synthesis of these analogs has been restricted by the lack of a method to introduce a phosphinate group containing a versatile functional group for further synthetic elaboration. We describe here the synthesis of two reagents: Bis (trimethylsilyl} trimethylsilyloxymethyl phosphinite and Phenyl (Chloromethyl} [(triphenylphosphoranylidene}-methyl}] phosphinate chloride, both of which contain versatile groups needed for the complete synthesis of methylene polyphosphate nucleosides.

Biography

Laura Chronopoulou has completed her PhD in Materials Science at the University of Rome La Sapienza. She is currently working as a post-doc Researcher at the Department of Chemistry of the University of Rome La Sapienza, in the Industrial Chemistry group. She is a member of the Nanobiotechnology lab run by Prof. Cleofe Palocci. Her main research interests are the following: Synthesis and characterization of biopolymeric nanoparticles for drug delivery applications; Bioproduction of peptidic hydrogels for biotechnological applications; Structure-activity studies of lipolytic enzymes immobilized on nanocarriers; Microfluidic approaches to the synthesis of nanomaterials. She has authored 40 publications that have been cited over 600 times, and her publication H-index is 15.

Publications

1. Use of Tris (trimethylsilyl) phosphite in the preparation of N-mustard-bis-phosphonic acids as potential bone chemotherapy agents
2. Synthesis of 3-tert-butyl-1(1-adamantyl) aziridinone and cleavage with Tris (trimethylsilyl) phosphate
3. Synthesis of 1, 3-di-tert-butyl-butylaziridinone and reaction with Tris (trimethylsilyl) phosphate
4. Preparation of the N-mustard-bisphosphonic acid of Bicine with TMSP
5. Synthesis and Reactivity of Bis (trimethylsilyl) trimethylsilyloxymethylphosphonite: a useful reagent for the introduction of the hydroxymethylphosphinate group
6. Organophosphorus chemistry: Synthesis and biochemistry of methylene analogs of natural phosphates (early published work)
7. Synthesis of optically active diether phosphonate analogs of lecithin,
8. A synthetic phosphonate-phosphinate liponucleotide analogue
9. Inhibition of platelet phosphatidylinositol synthetase by an analog of CDP-diacylglycerol, Biochem. Biophys
10. Glycerophospholipids: Handbook Organophosphorus Chemistry

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