Title: Synthesis of new derivatives with oxa and azaspiro systems
Author(s): Rahimizadeh M., Shiri A.*, Bakavoli M.
Address: Chemistry Department, Ferdowsi University of Mashhad, Mashhad, Iran

Spiroorthocarbonates are useful monomers that show no shrinkage in volume on polymerization. They are important in the field of materials such as precision materials, adhesives, dental composites and so on [1]. Although there are some methods for the synthesis of spiroorthocarbonates but most of them have some disadvantages.[2-4] So the search for the efficient methods are still in demand. However, one of the best method reported so far, is the one pot synthesis using dichlorodiphenoxymethane(1) and dinucleophils [5]. We have chosen this method for the synthesis of new derivatives of oxa and aza systems.

Dichlorodiphenoxymethane(1) was prepared from the reaction of diphenylcarbonate and phosphorus pentachlorid[5]. Various dinucleophiles like salicylic acid (2), phthalic acid(3), anthranilic acid(4) and 1,8-diaminonaphthalene(5) were used to synthesize 2,2'-spiro[benzo[1,3]dioxin-4-one](7), 3,3'-spiro[benzodioxepine-1,5-dione](8), 2,2'-spiro[1,2-dihydro-4H-3,1-benzoxazin-4-one](9) and Spiro[2,3-dihydro-1H-perimidine](10), respectively. (Scheme 1)

However, for the reaction of 1,1'-binaphthyl-2,2'-diol(6) with (1) a tetraoxaspiro compound did not formed and the reaction stopped at the first step and gave 2,2'-diphenoxydinaphtho[2,1-d,1,2-f][1,3]dioxepine(11). (Scheme 2)
References:
5. Mues P., Buysch H.; Synthesis; 1990, 249