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PART 1:

Journal Name:	Physical Review & Research International
Manuscript Number:	MS: 2012 PRRI 2808
Title of the Manuscript:	Spectroscopic properties of HALS doped polycarbonate by fluorescence spectroscopy

<u>General guideline for Peer Review process is available in this link:</u> (http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline)

• This form has total 9 parts. Kindly note that you should use all the parts of this review form.

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PART 2: Review Comments

	Reviewer's comment This paper brings new and interesting conclusions concerning the stabilizing effect of known long- term (light) stabilizers of type HALS at aging of polycarbonate. The author based on his data conclude that stabilizers of TINUVIN 770 and 123 at concentration 1.5 % deteriorate properties of polycarbonate and has no stabilizing effect contrary to it they enhance the degradation in combination of light exposition and processing (mechanical treatment). These conclusions are not well substantiated and therefore I do not recommend publication in the present form.	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<u>Compulsory</u> REVISION comments	The weak points of the paper are: 1/ The used polycarbonate is not specified and not well characterized. I am missing the origin of the probably bisphenol A polycarbonate (PC). It is commercial product as Lexan or Macrolon or specially especially prepared? 2/ I assume that the PC is first treated mechanically by processing under given condition mostly at screw speed about 700 rpm and throughput 45 kg/h. Here the type of equipment for processing (extrusion) either processing temperature is given. 3/ Thermal and mechanical processing results in degraded PC which exhibits luminescence. This luminescence is enhanced by UV exposition and it is enhanced even more by Tinuvin 770 and 123 which are well known long term (light) stabilizers of HAS type. The structure of possible chromophores	

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responsible for light emission which is formed due to thermal and UV exposition are not specified. On the other hand the yellowing of PC is well known since the 60-ties of the last century. It is difficult to envision that the chromophores involved in yellowing yield emission either due to photo-Fries rearrangement which brings about o-hydroxyphone structural units. They absorb in he region 290-400 nm (yellowing) and these structures are effective quenchers of the singlet as well as triplet states. The another degradation process operating at PC namely photo/oxidation results in quinoid carbonyl type structural units which yield no emission either.	
Moreover, the stabilizers of type HAS transform on N- oxyl type radicals which are also quenchers of singlet as well as triplet states. Therefore, the fluorescence (emission) of the degraded samples of P should be due to the sample or specific impurity. It is necessary to record UV spectra of the degraded PC besides excitation ones and compare them. 4/ The stabilizers TINUVIN 770 and 123 worsen the properties of PC during the thermal-mechanical processing. What is the reason according the author?	

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Minor REVISION comments	It is necessary to justify selection of emission wavelength 470 nm at excitation spectra and excitation wavelength 340 at emission spectra What is the lifetime of the emission?	
Optional/General comments	The conclusions of the author are contradictory to the known behaviour at degradation of PC and mechanism of action of stabilizers of HAS type. Therefore, the presented data must be more precisely characterized and additional data are needed.	

Reviewer Details:

Name:	Anonymous Reviewer
Department, University & Country	