Supporting Information

Characterization and photodegradation of polybrominated diphenyl ethers (PBDEs) in car seat fabrics from end-of-life vehicles

Amina Khaled[1], Claire Richard[1], Lisa Redin[2], Mirva Niinipuu[2], Stina Jansson[2], Farouk Jaber[3], Mohamad Sleiman[1*]

[1] Université Clermont Auvergne, CNRS, SIGMA Clermont, Institut de Chimie de Clermont-Ferrand, F-63000 Clermont–Ferrand, France.

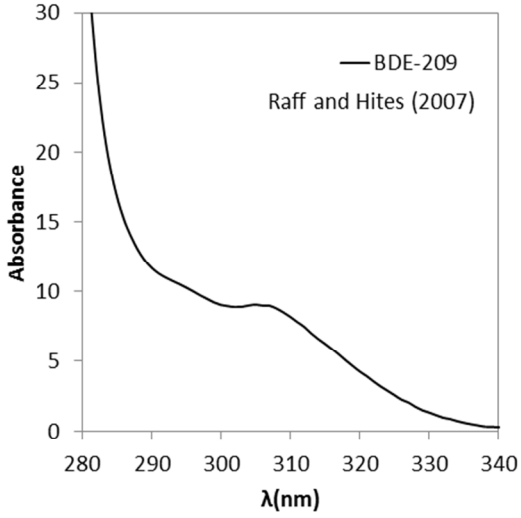
[2] Umeå University, Department of Chemistry, SE-90187 Umeå, Sweden.

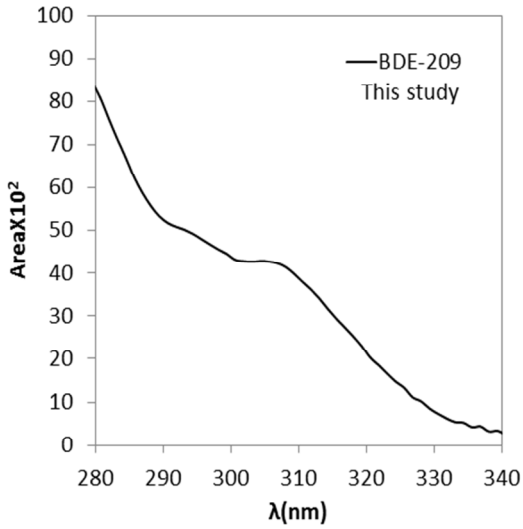
[3] Laboratory of Analysis of Organic Compounds (509), Faculty of Sciences I, Lebanese University, Hadath, Beirut, Lebanon.

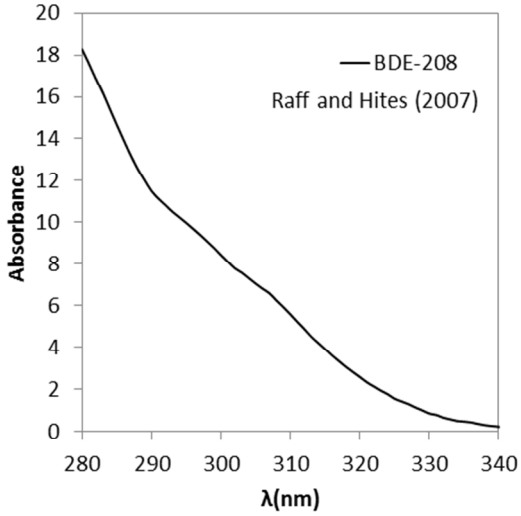
*Corresponding author: M Sleiman

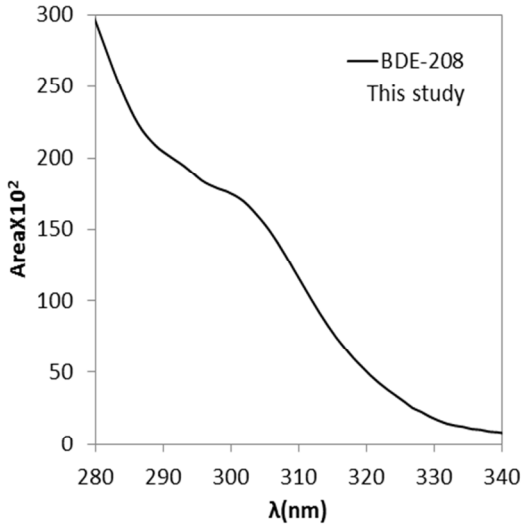
Email: mohamad.sleiman@sigma-clermont.fr

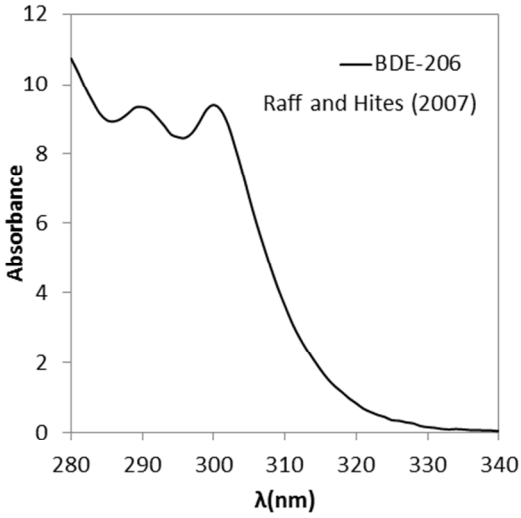
Tel: +33 (0)4 73 40 76 35

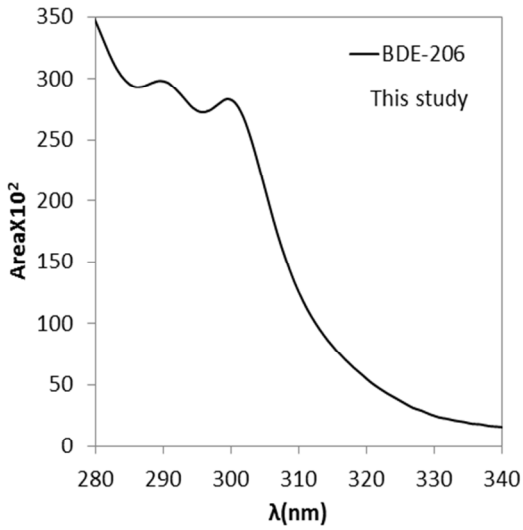

BDE-209
Raff and Hites (2007)
Absorbance
λ(nm)

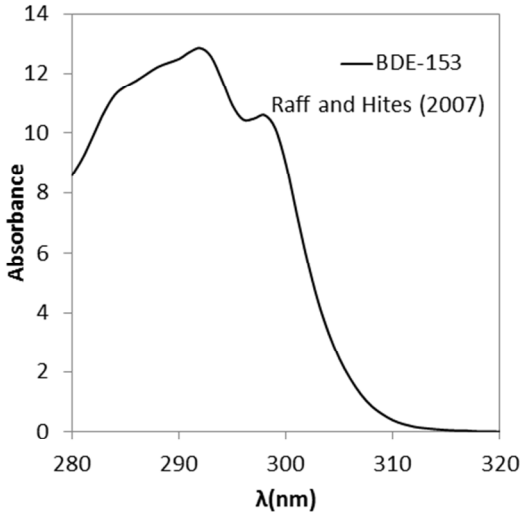

BDE-209
This study
AreaX10²
λ(nm)

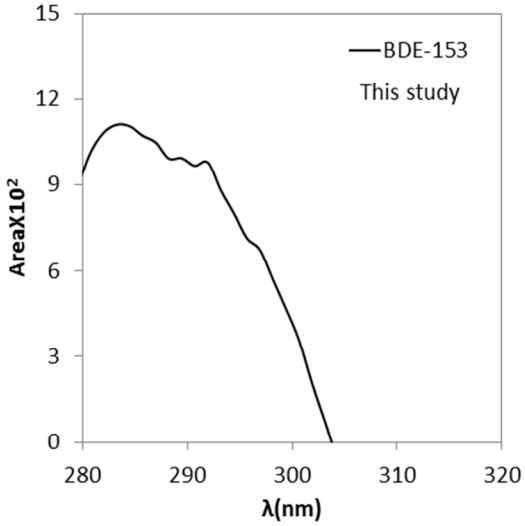

BDE-208
Raff and Hites (2007)
Absorbance
λ(nm)

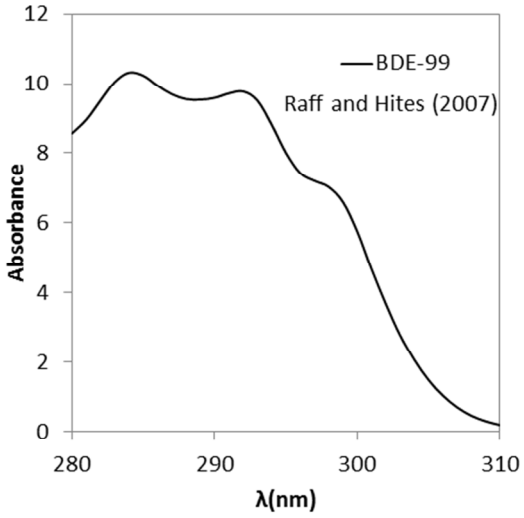

BDE-208
This study
AreaX10²
λ(nm)

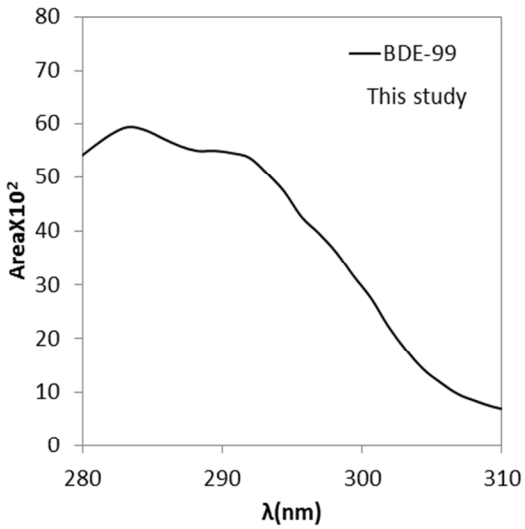

BDE-206
Raff and Hites (2007)
Absorbance
λ(nm)


BDE-206
This study
AreaX10²
λ(nm)


BDE-153
Raff and Hites (2007)
Absorbance
λ(nm)


BDE-153
This study
AreaX10²
λ(nm)


BDE-99
Raff and Hites (2007)
Absorbance
λ(nm)


BDE-99
This study
AreaX10²
λ(nm)

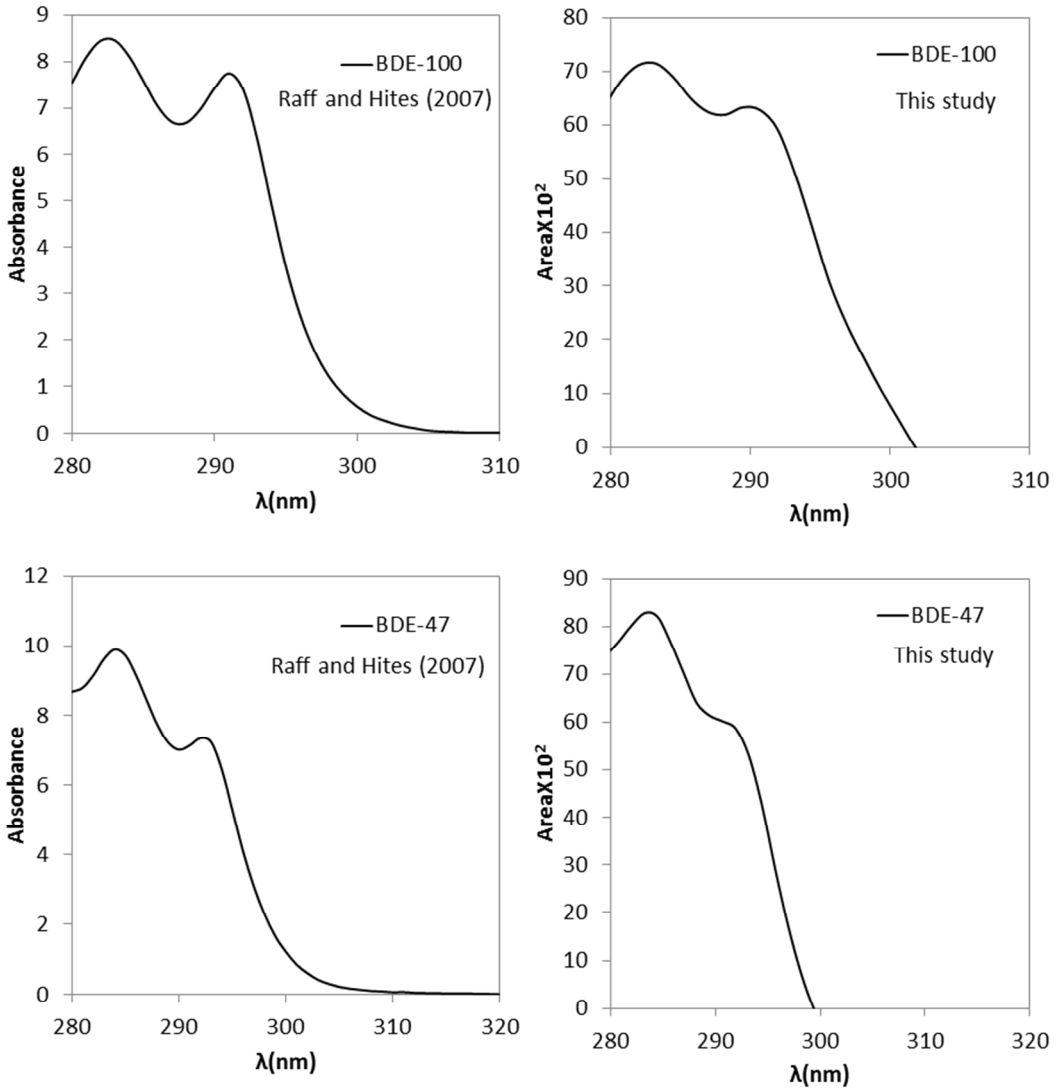


Figure S1. Comparison of UV spectra of PBDEs detected by HPLC-DAC in our study and those reported by Raff and Hites. [1]

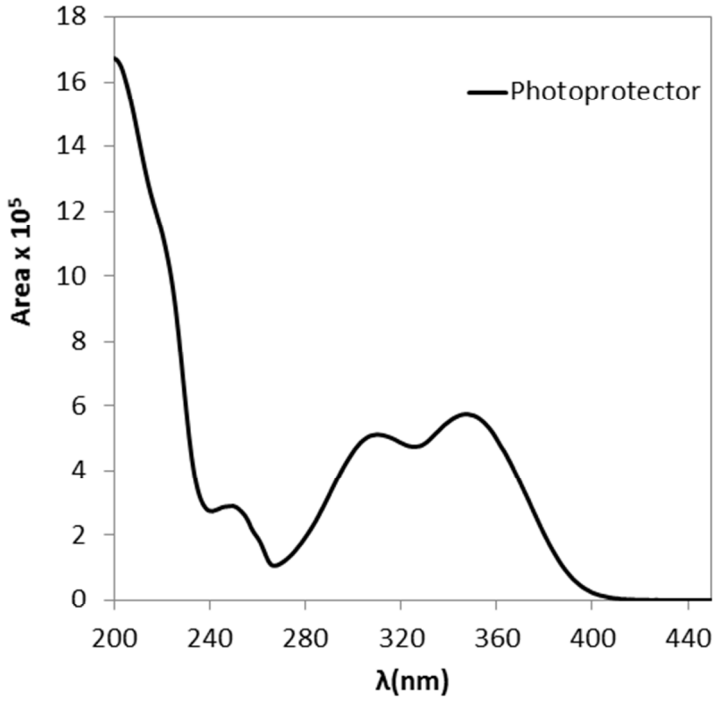


Figure S2. UV spectrum of a benzotriazole UV absorber detected in ELV fabric sample S1.

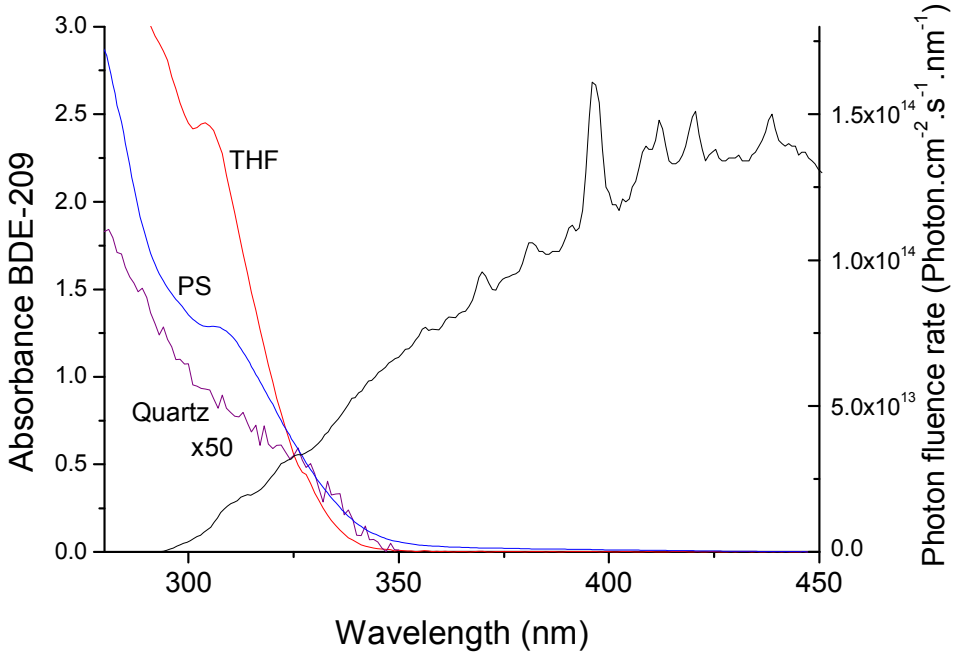


Figure S3. Comparison of Suntest Xenon lamp UV-visible emission spectrum and UV-visible absorption spectrum of BDE-209 at 9600 µg/mL in tetrahydrofuran, in PS (2.5% wt) and as a pure deposit on Quartz.

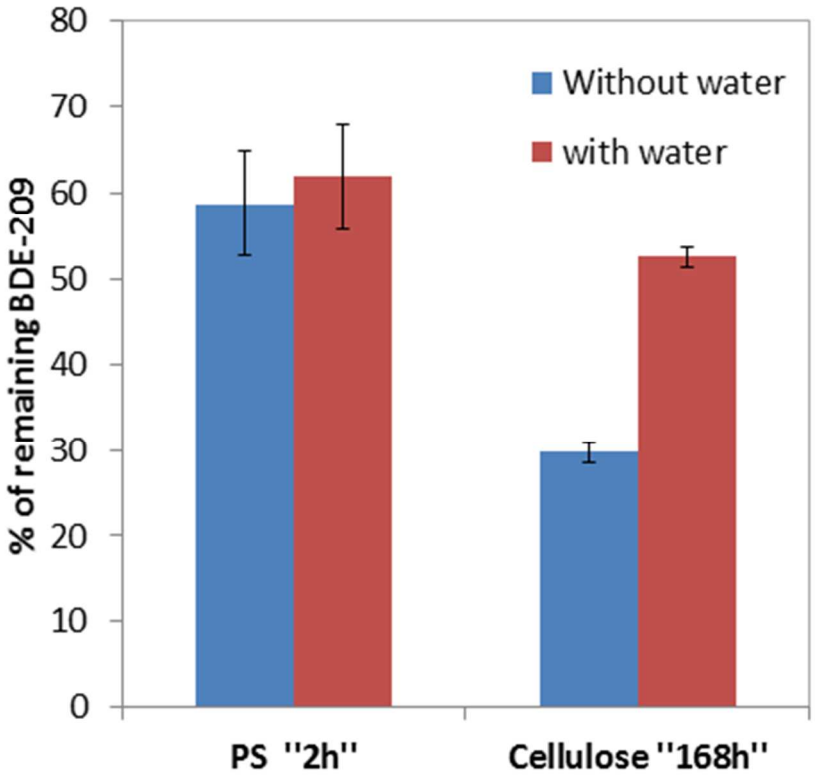


Figure S4. Effect of hydration on the photodegradation rate of BDE-209 impregnated at 2.5% in weight in cellulose and polystyrene films of 200 μm thickness and irradiated in a simulated sunlight exposure chamber (Suntest XPS, Atlas) at 550 W m^{-2}.

Table S1. Levels of BDE-209 and individual PBDEs (μg g^{-1}) in car seat fabrics and in polyurethane foam collected from ELVs.

ELV	BDE-209	BDE-208	BDE-206	BDE-196	BDE-197	BDE-183	BDE-154	BDE-153	BDE-99	BDE-100	BDE-47
					FABRIC						
S1	119571	125	7943	nd	3	5	nd	nd	nd	nd	nd
S2	nd	nd	13	39	nd	90	nd	nd	nd	nd	nd
S3	1603	34	16	nd	122	269	nd	nd	nd	nd	nd
S4	549	46	10	nd	nd	11	14	114	71	nd	10
S5	48	232	nd	416	270	nd	nd	nd	nd	nd	nd
S6	8	205	nd	nd	144	nd	36	190	23	nd	9
S7	221	434	27	51	110	nd	nd	nd	nd	nd	nd
S8	218	171	2	3	262	205	nd	nd	nd	nd	nd
S9	145	256	nd	nd	165	69	nd	nd	nd	nd	nd
					POLYURETHANE FOAM						
S3	5864	63	382	27	267	33	nd	nd	nd	nd	nd
S4	724	14	17	nd	60	436	279	867	2870	717	2606
S5	99	21	9	nd	nd	278	2	21	21	nd	40
S6	nd	19	5	nd	7	147	123	455	1090	363	1006
S7	98	20	95	nd	61	147	nd	nd	68	nd	21
S8	349	nd	16	16	52	158	8	32	36	nd	15
S9	20	nd	87	nd	49	90	8	15	350	49	101

References

1. Raff, J.D.; Hites, R.A., Deposition versus photochemical removal of PBDEs from lake superior air. *Environ Sci Technol* **2007**, 41, 6725-6731.