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Supplementary Materials

Simulated Ageing of Crude Oil and Advanced Oxidation Processes for Water Remediation since Crude Oil Pollution

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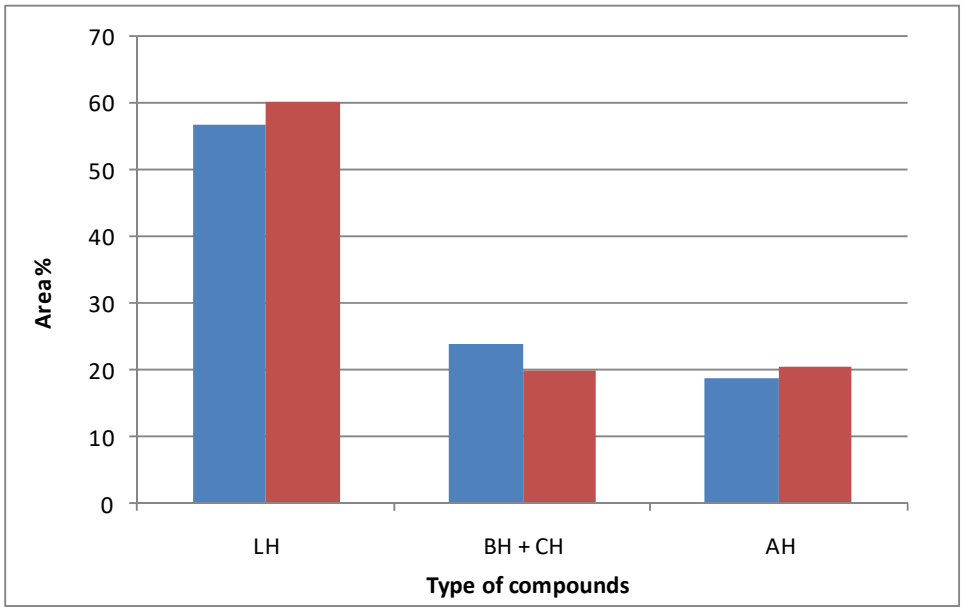
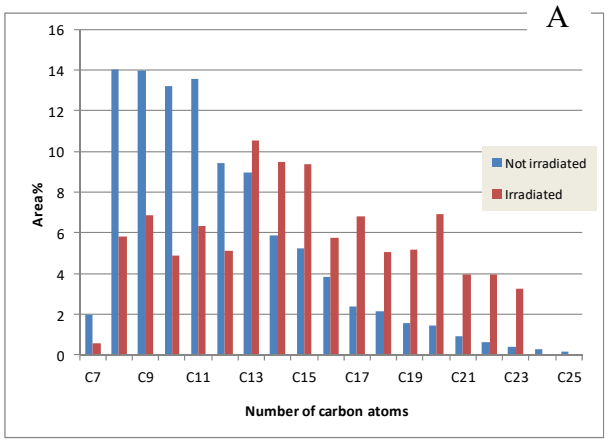
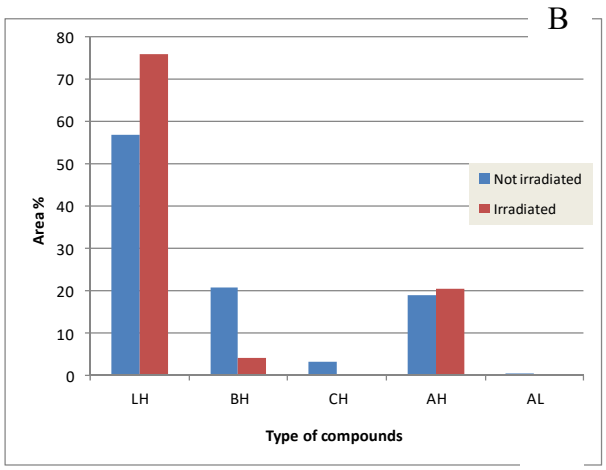
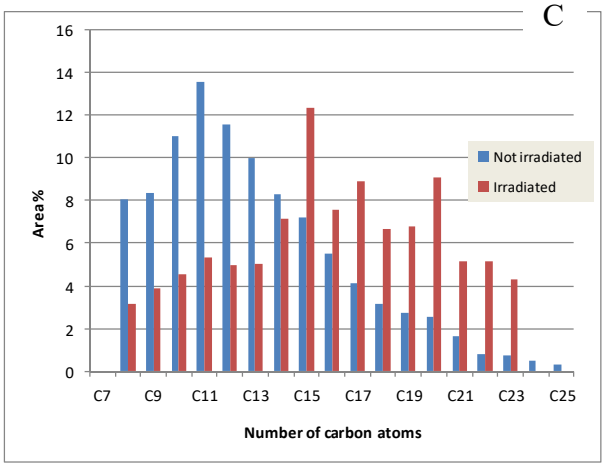


Figure S1. Percentage of compounds in crude oil as recognized by GC-MS (**blue column**) and ^{1}H NMR (**red column**).


A
16
14
12
10
8
6
4
2
0
Area %
Not irradiated
Irradiated
C7
C9
C11
C13
C15
C17
C19
C21
C23
C25
Number of carbon atoms


B
80
70
60
50
40
30
20
10
0
Area %
Not irradiated
Irradiated
LH
BH
CH
AH
AL
Type of compounds


C
16
14
12
10
8
6
4
2
0
Area %
Not irradiated
Irradiated
C7
C9
C11
C13
C15
C17
C19
C21
C23
C25
Number of carbon atoms

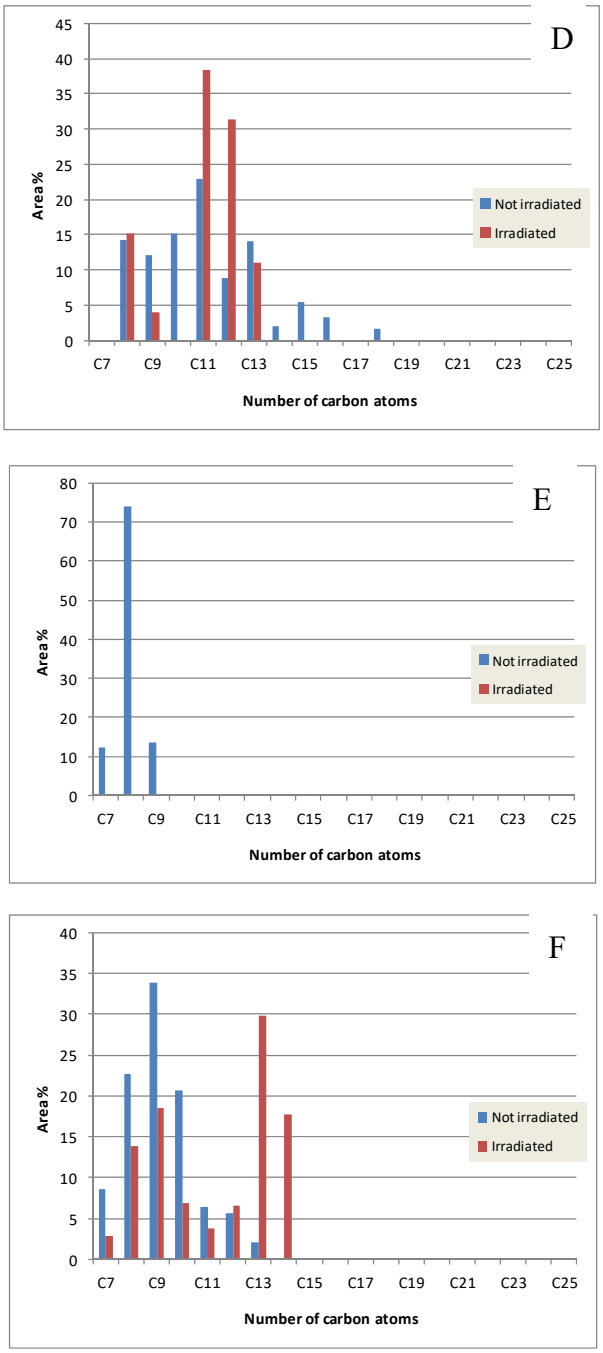


Figure S2. GC-MS compositional analysis of crude oil (**blue column**) and solar simulator irradiated crude oil (**red column**), as a function of the number of carbon atoms (**A**); composition of crude oil as a function of the type of compounds, LH: linear aliphatic hydrocarbons; BH: branched aliphatic hydrocarbons; CH: cyclic aliphatic hydrocarbons; AH: aromatic hydrocarbons; AL: alkenes (**B**); composition of the linear aliphatic hydrocarbons as a function of the number of carbon atoms (**C**); composition of the branched aliphatic hydrocarbons fraction as a function of the number of carbon atoms (**D**); composition of the cyclic hydrocarbons as a function of the number of carbon atoms (**E**); composition of the aromatic hydrocarbons fraction as a function of the number of carbon atoms (**F**).

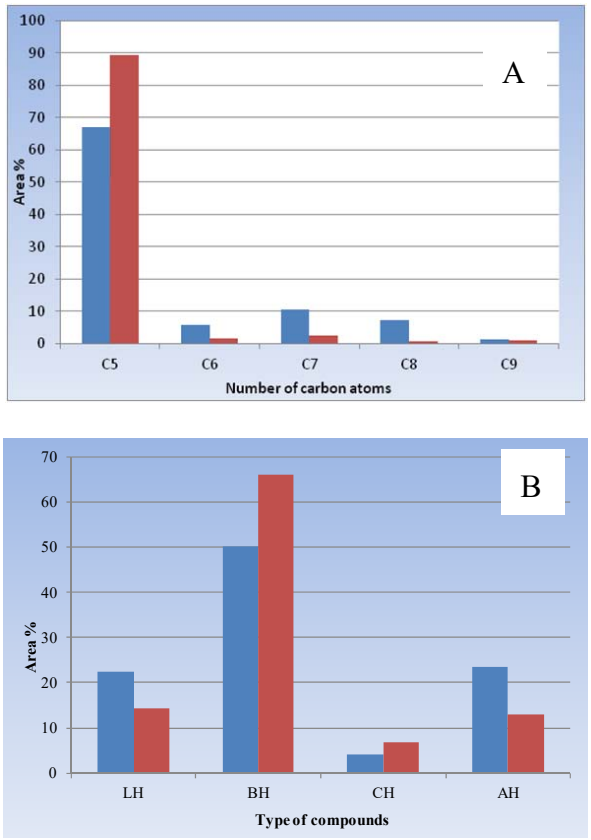


Figure S3. GC-MS compositional analysis of WSF crude oil before (**red column**) and after (**blue column**) photocatalysis: distribution of hydrocarbons as a function of the number of carbon atoms (**A**) and distribution of the compounds as a function of chemical species (**B**).

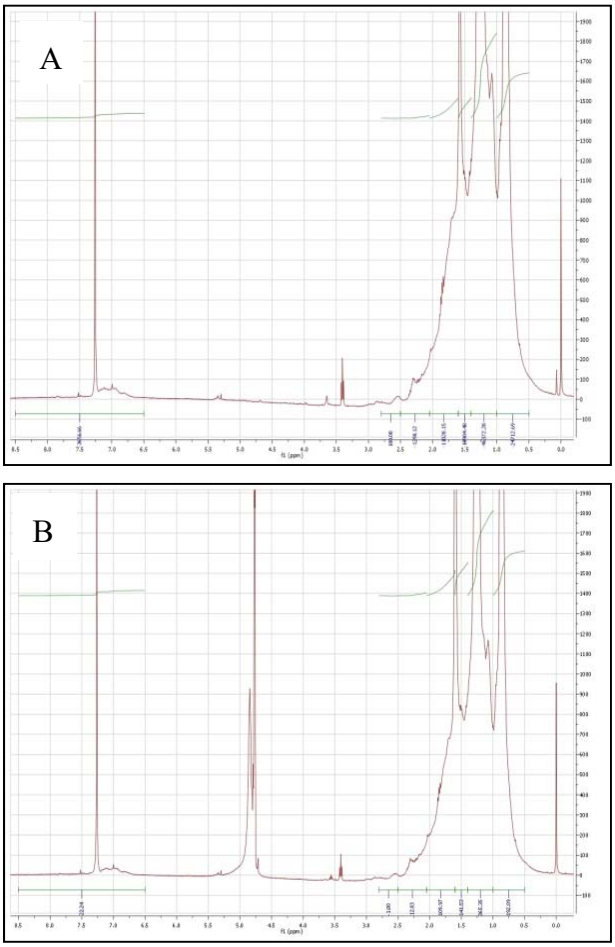


Figure S4. ^{1}H NMR spectra of WSF crude oil before (**A**) and after (**B**) photocatalysis.

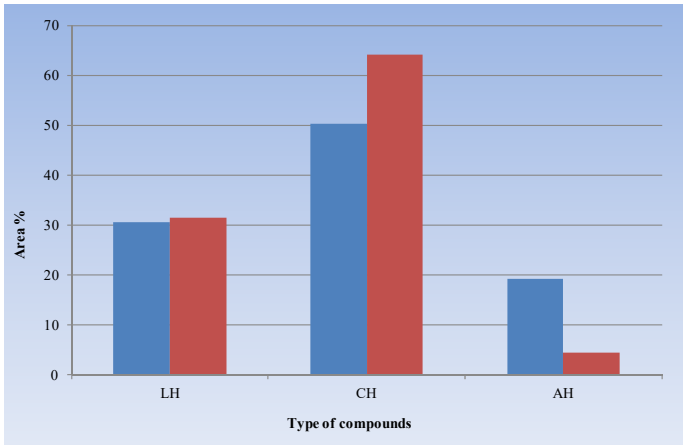


Figure S5. ^{1}H NMR compositional analysis of WSF crude oil before (**red column**) and after (**blue column**) photocatalysis: distribution of the compounds as a function of chemical species.

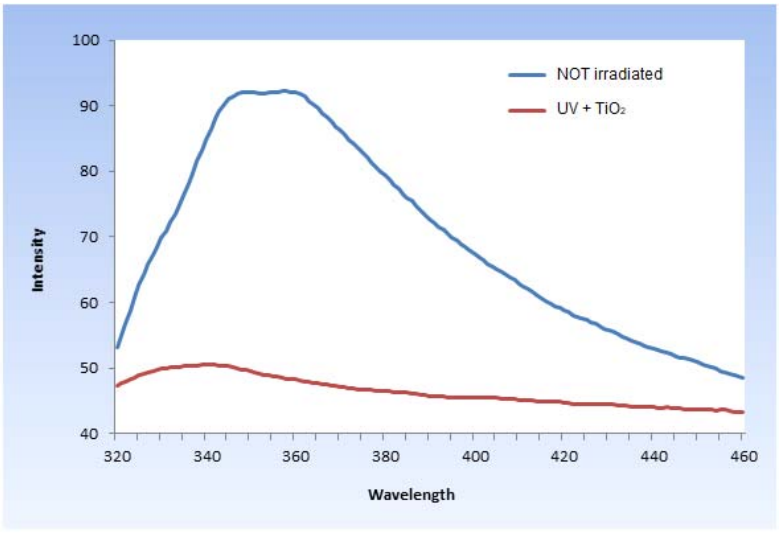


Figure S6. Fluorescence spectra of WSF crude oil before (**blue line**) and after (**red line**) photocatalysis.

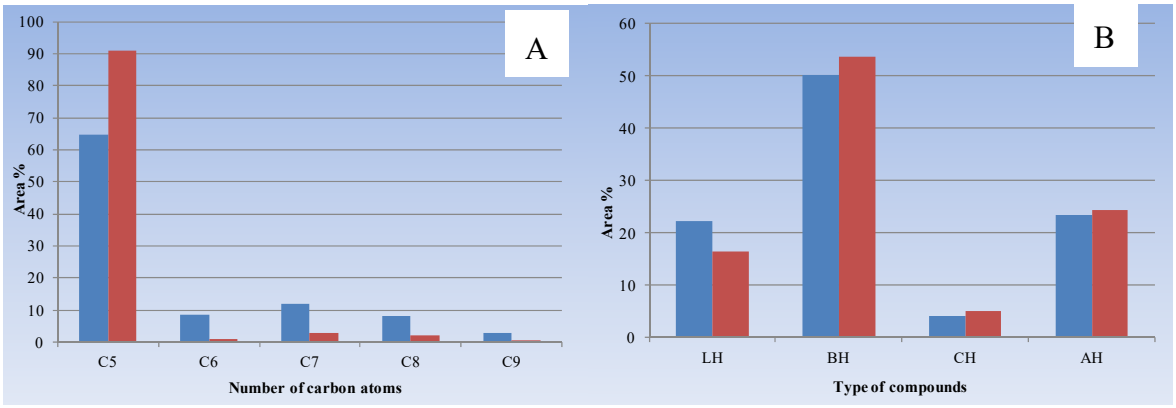


Figure S7. GC-MS compositional analysis of WSF crude oil before (**red column**) and after (**blue column**) sonolysis: distribution of hydrocarbons as a function of the number of carbon atoms (**A**) and distribution of the compounds as a function of chemical species (**B**).

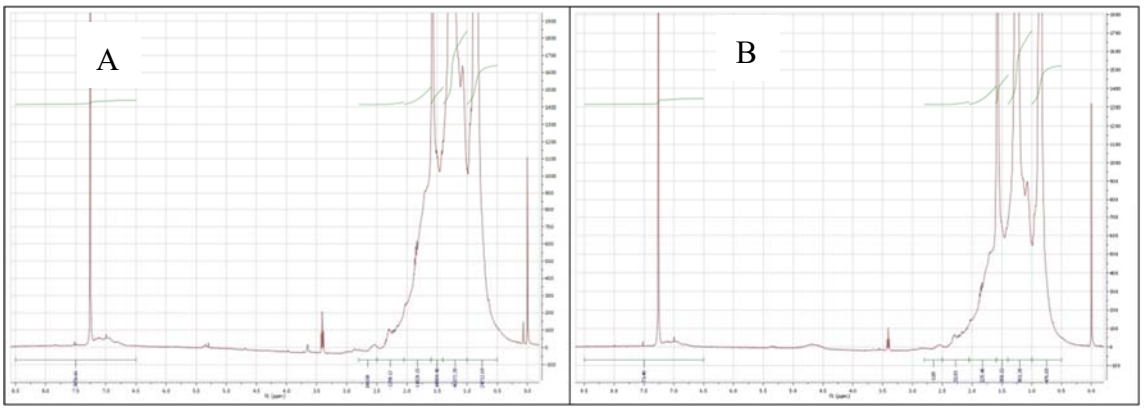


Figure S8. ^{1}H NMR spectra of WSF crude oil before (**A**) and after (**B**) sonolysis.

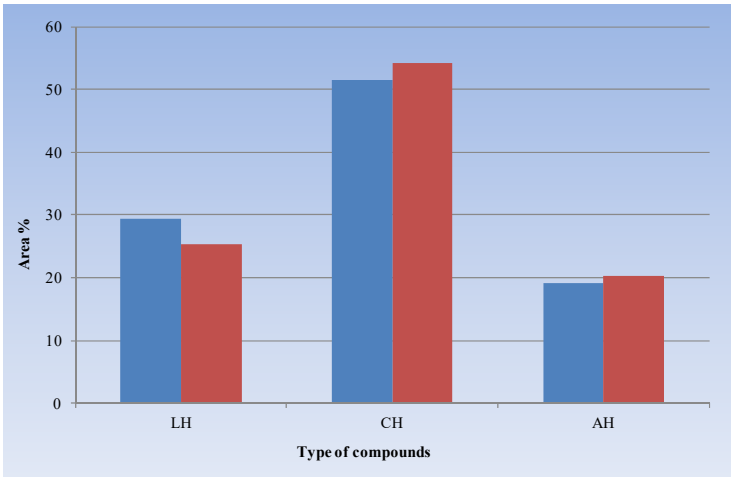


Figure S9. ^{1}H NMR compositional analysis of WSF crude oil before (**red column**) and after (**blue column**) sonolysis: distribution of the compounds as a function of chemical species.

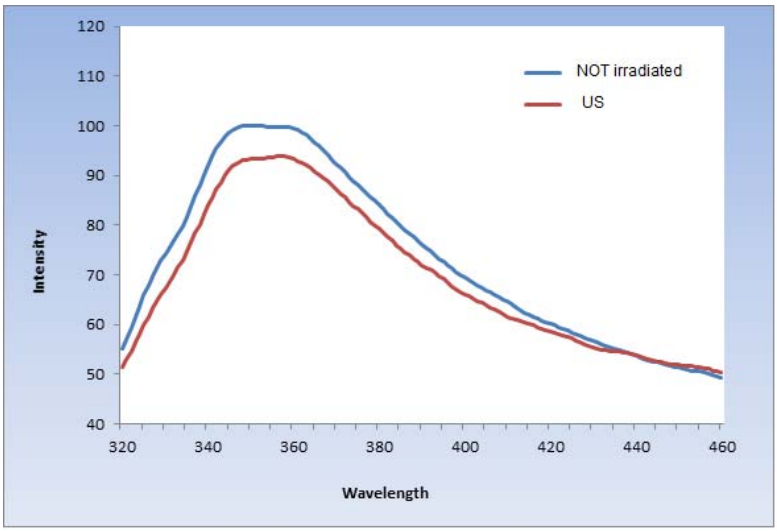


Figure S10. Fluorescence spectra of WSF crude oil before (**blue line**) and after (**red line**) sonolysis.

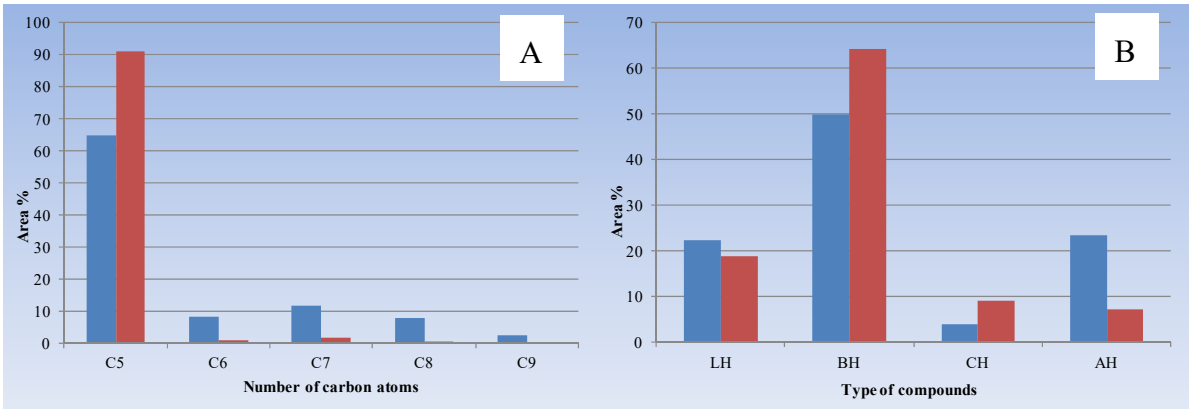


Figure S11. GC-MS compositional analysis of WSF crude oil before (**red column**) and after (**blue column**) sonophotocatalysis: distribution of hydrocarbons as a function of the number of carbon atoms (**A**) and distribution of the compounds as a function of chemical species (**B**).

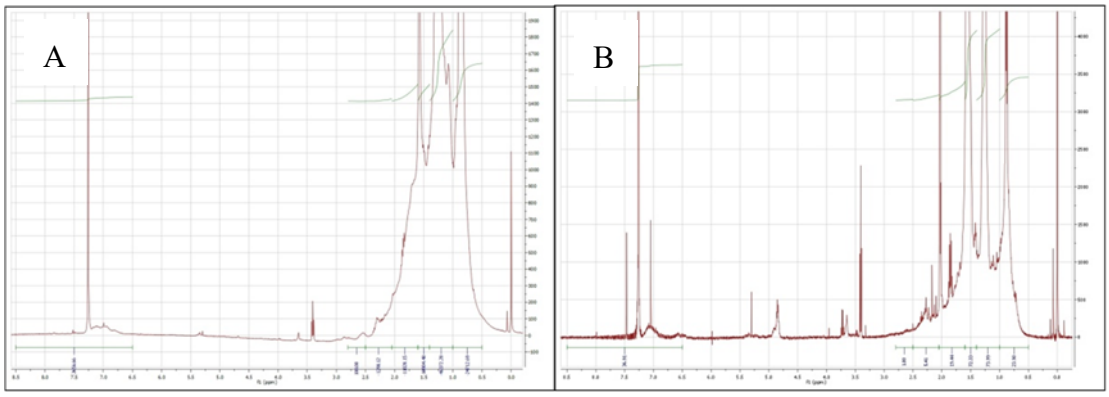


Figure S12. ^{1}H NMR spectra of WSF crude oil before (**A**) and after (**B**) sonophotocatalysis.

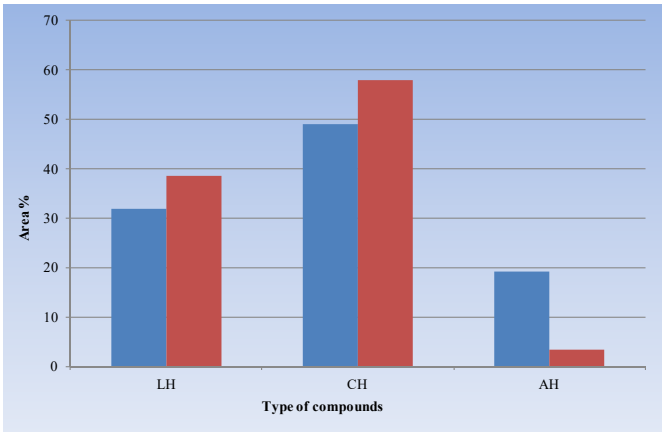


Figure S13. ^{1}H NMR compositional analysis of WSF crude oil before (**red column**) and after (**blue column**) sonophotocatalysis: distribution of the compounds as a function of chemical species.

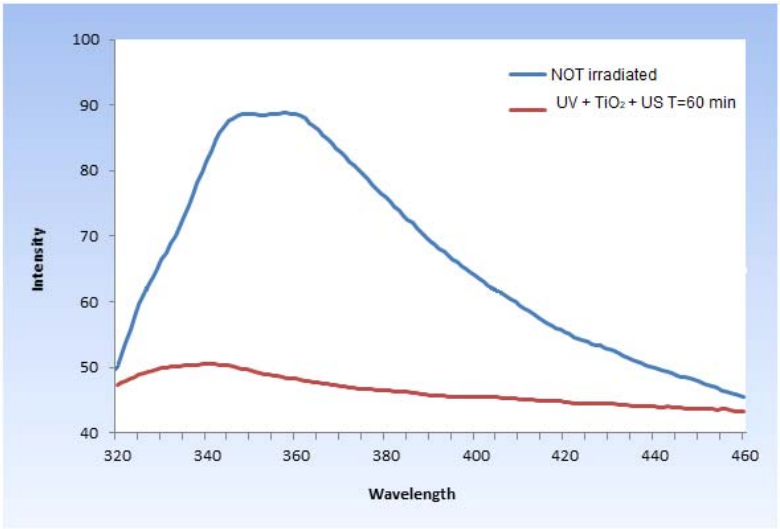


Figure S14. Fluorescence spectra of WSF crude oil before (**blue line**) and after (**red line**) sonophotocatalysis.