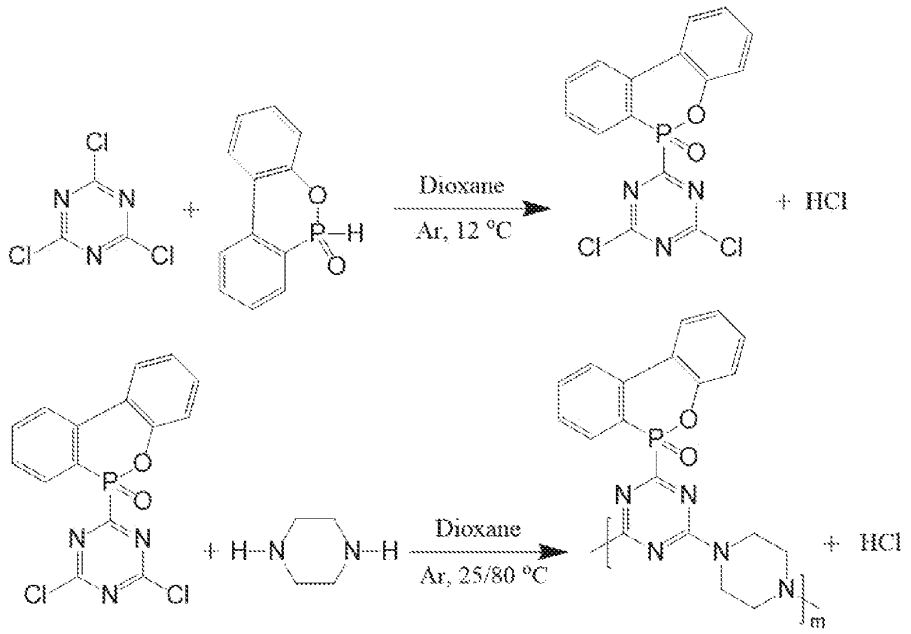

Cl
N
N
Cl
N
Cl
+
O
P
H
O
Dioxane
Ar, 12 °C
O
P
O
N
N
Cl
N
Cl
+ HCl
O
P
O
N
N
Cl
N
Cl
+ H
N
N
H
Dioxane
Ar, 25/80 °C
O
P
O
N
N
N
N
m
+ HCl

FIG. 1

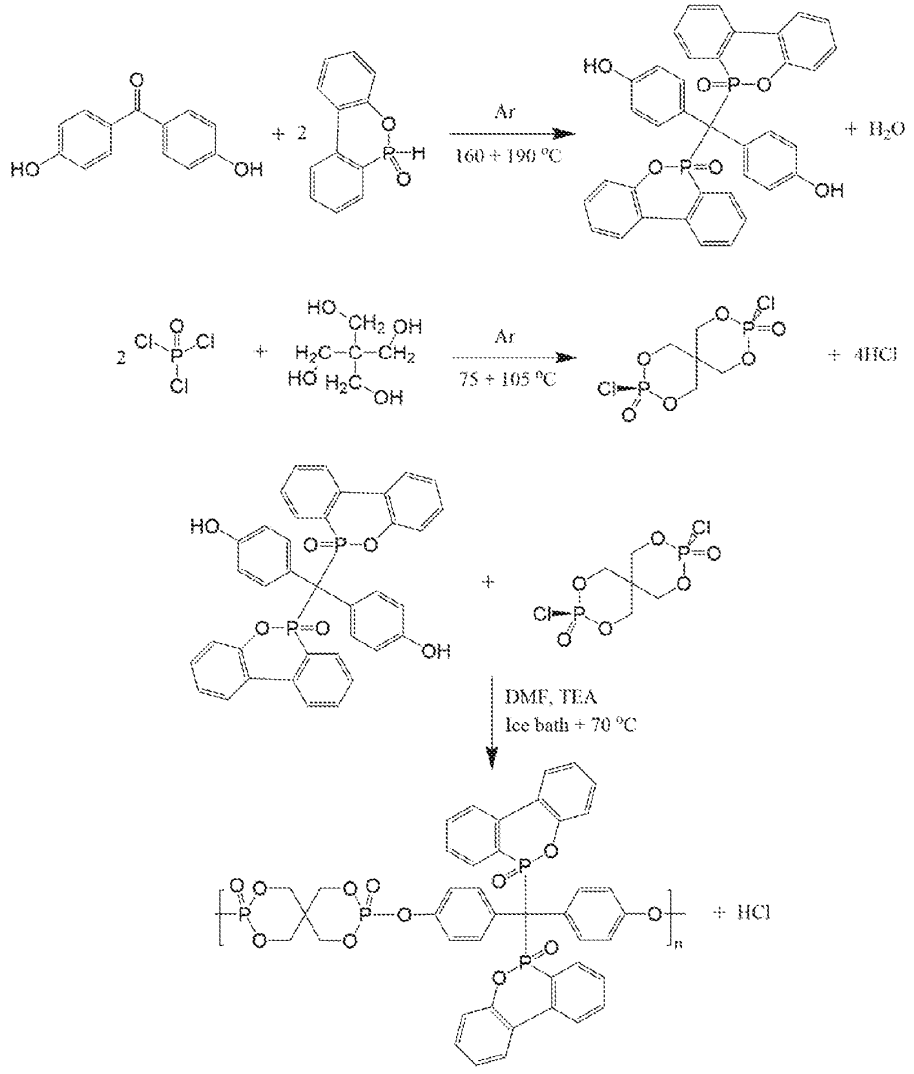


FIG. 2

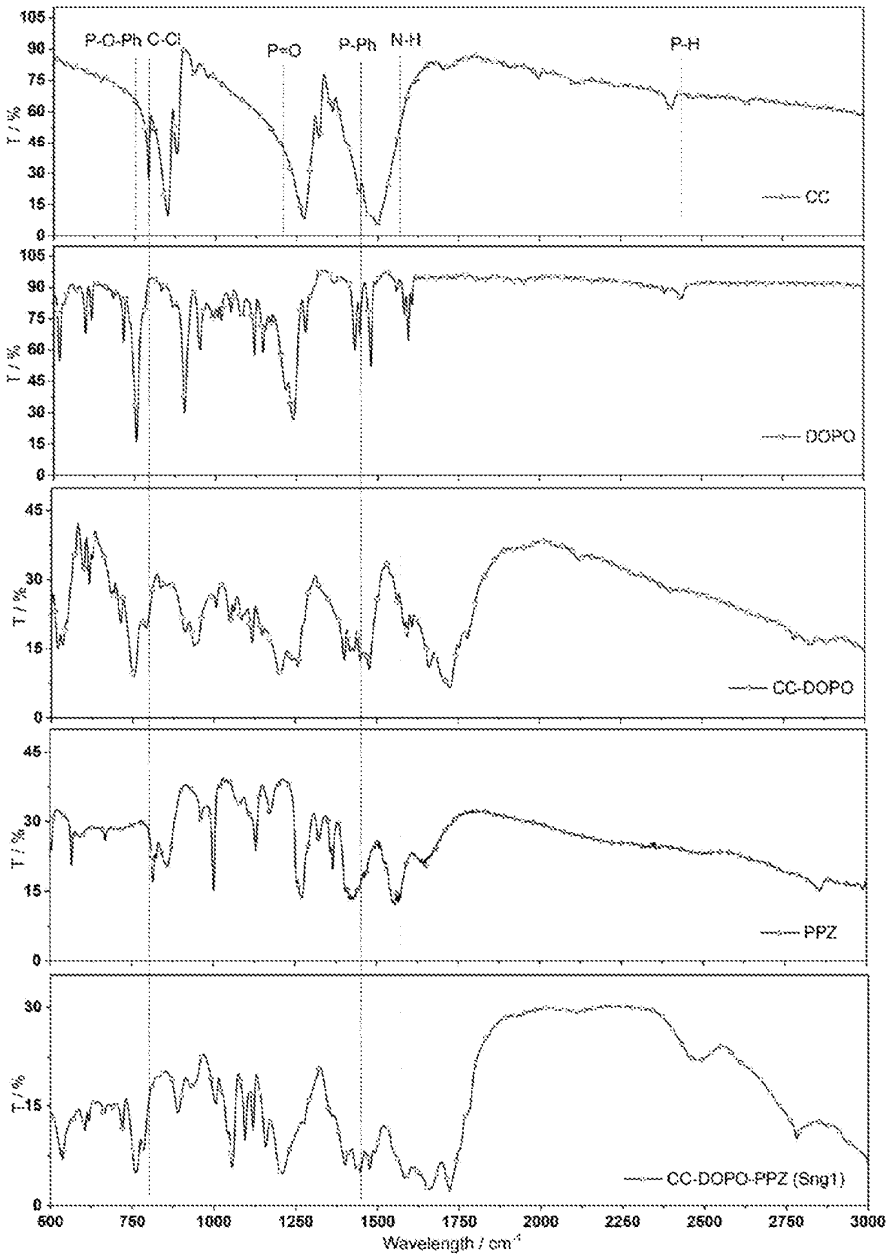

P-C-Ph
C-Cl
P=O
P-Ph
N-H
P-H
T / %
CC
DOPO
CC-DOPO
PPZ
CC-DOPO-PPZ (Sng1)
Wavelength / cm-1

FIG. 3

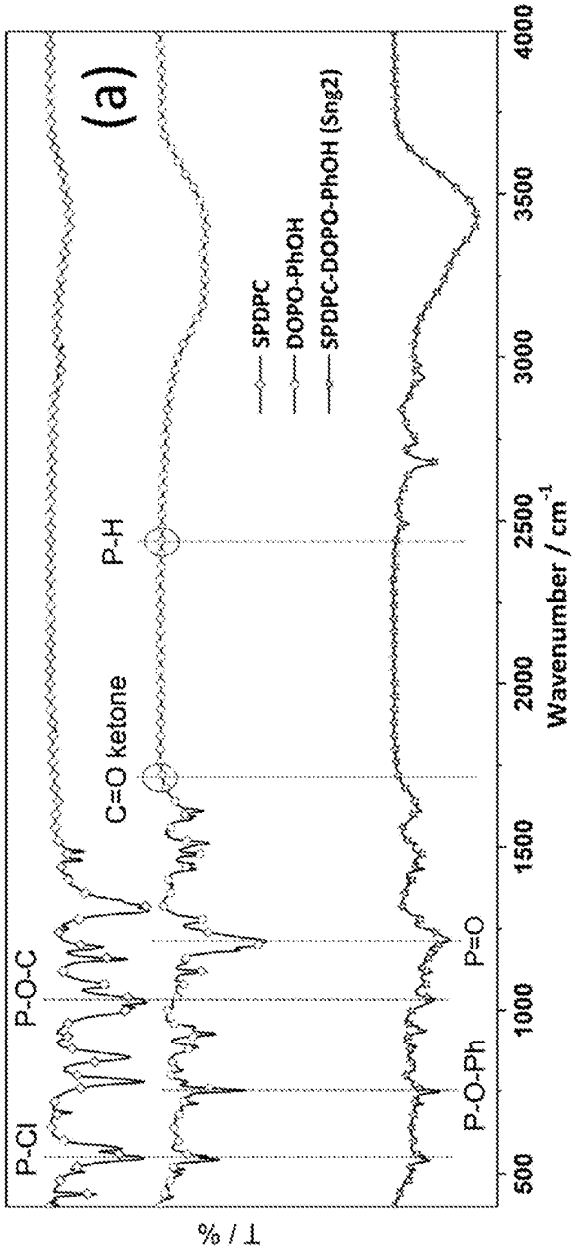
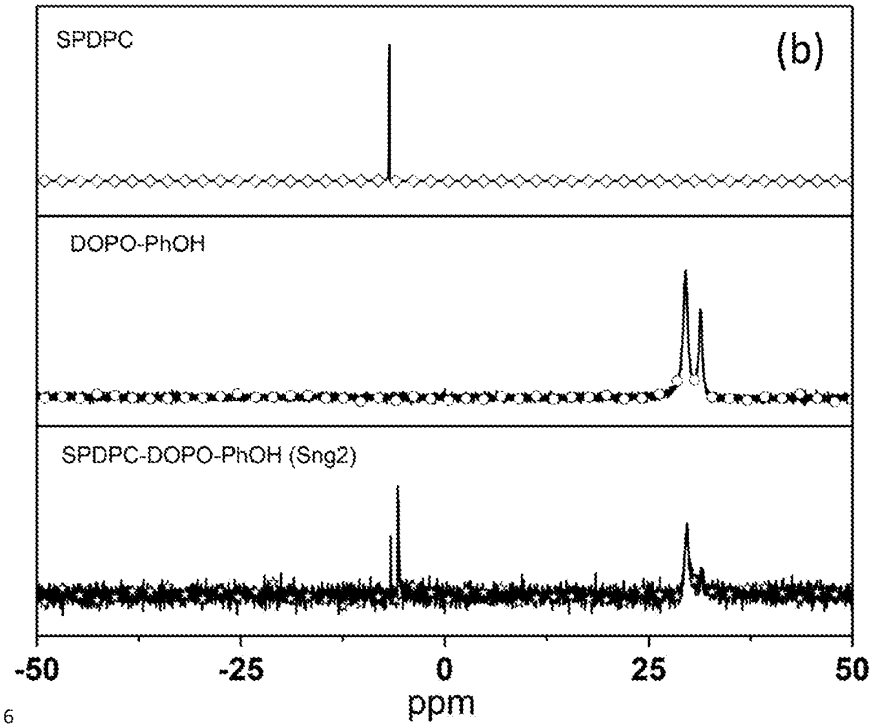

(a)
P-Cl
P-O-C
C=O ketone
P-H
P-O-Ph
P=O
SPDPC
DOPO-PhOH
SPDPC-DOPO-PhOH (Sng2)
T / %
Wavenumber / cm-1
500
1000
1500
2000
2500
3000
3500
4000

FIG. 4A



6

FIG. 4B

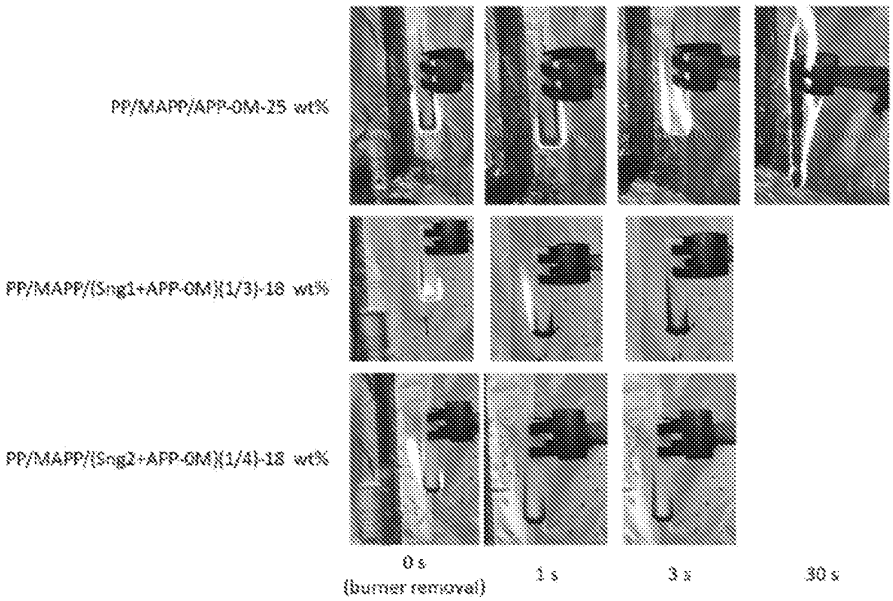

PP/MAPP/APP-OM-25 wt%
PP/MAPP/(Sng1+APP-OM)(1/3)-18 wt%
PP/MAPP/(Sng2+APP-OM)(1/4)-18 wt%
0 s
(burner removal)
1 s
3 s
30 s

FIG. 5