FIG. 1

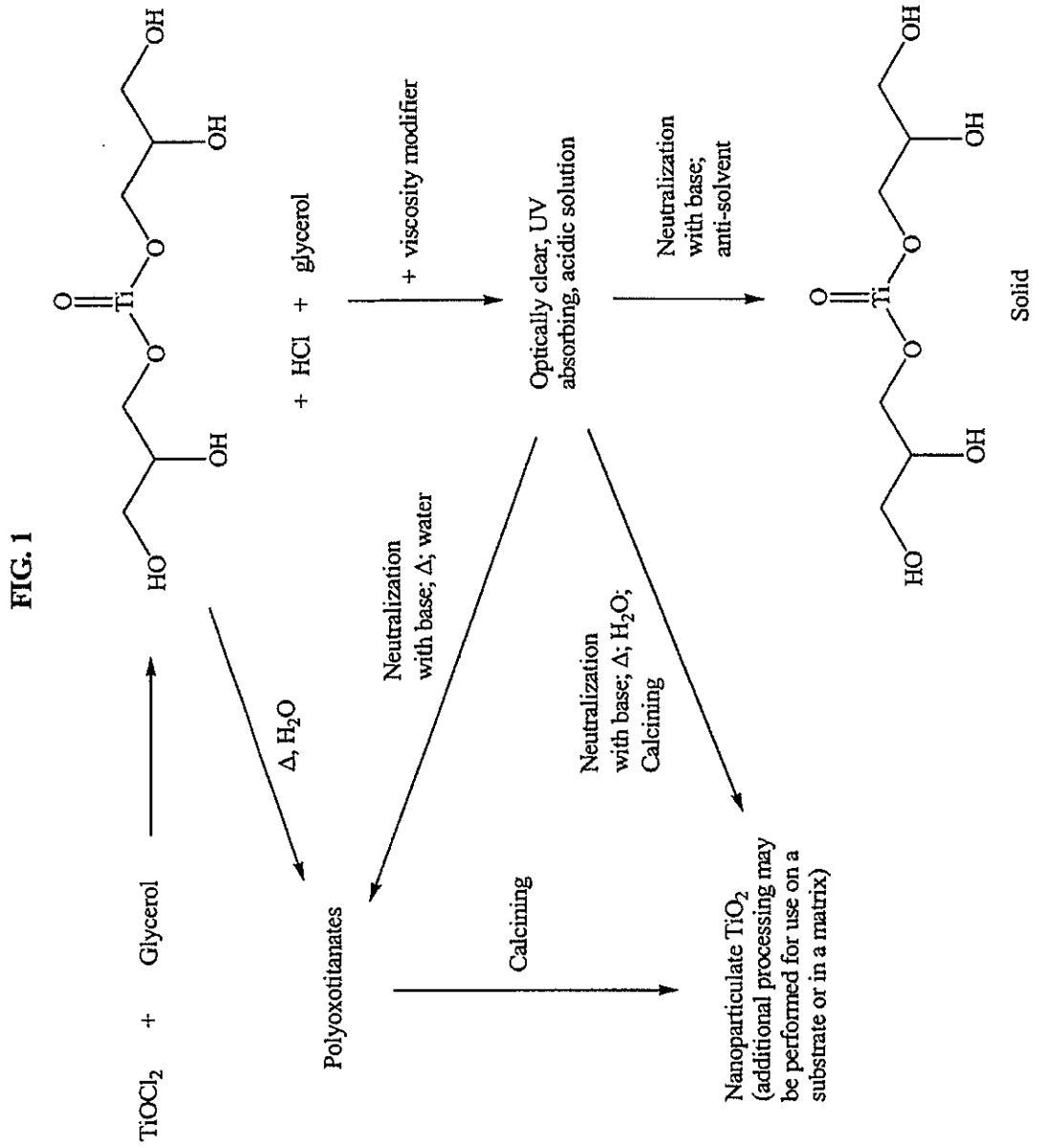

TiOCl2 + Glycerol
Δ, H2O
Polyoxotitanates
+ HCl + glycerol
+ viscosity modifier
Optically clear, UV absorbing, acidic solution
Neutralization with base; Δ; water
Calcining
Neutralization with base; Δ; H2O; Calcining
Nanoparticulate TiO2 (additional processing may be performed for use on a substrate or in a matrix)
Neutralization with base; anti-solvent
Solid

FIG. 2

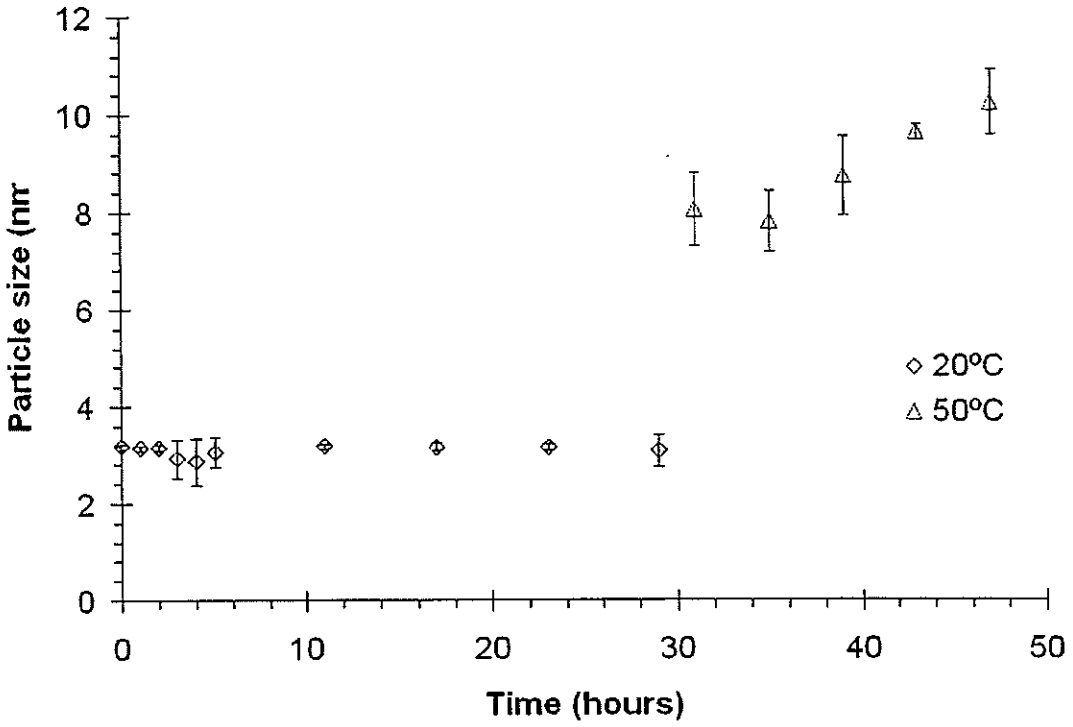


FIG. 3

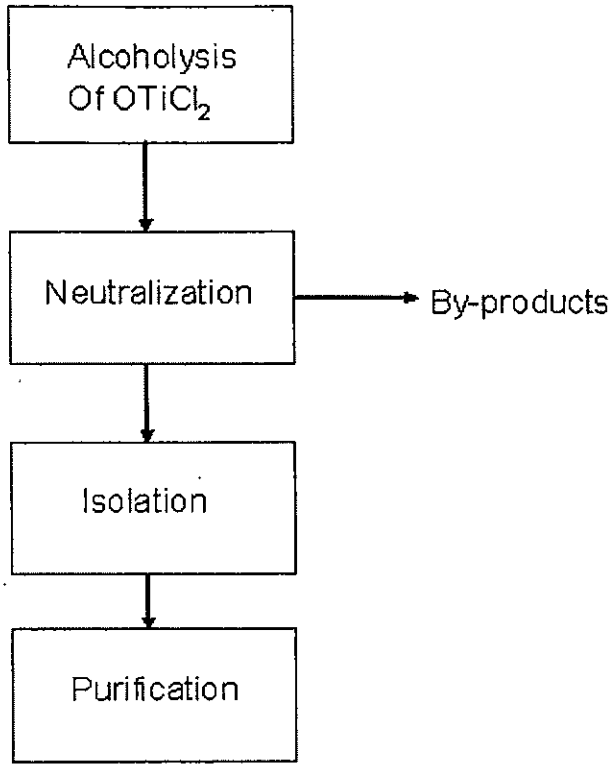

Alcoholysis
Of $OTiCl_2$
Neutralization
By-products
Isolation
Purification

FIG. 4

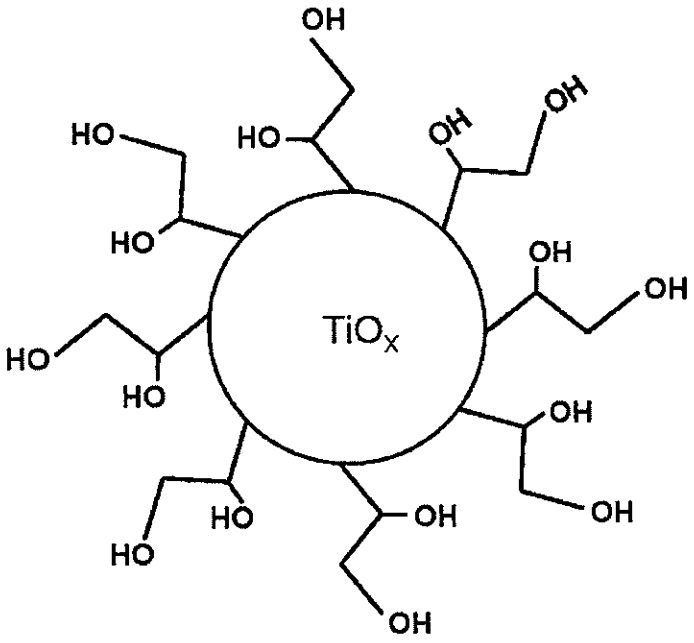


FIG. 5

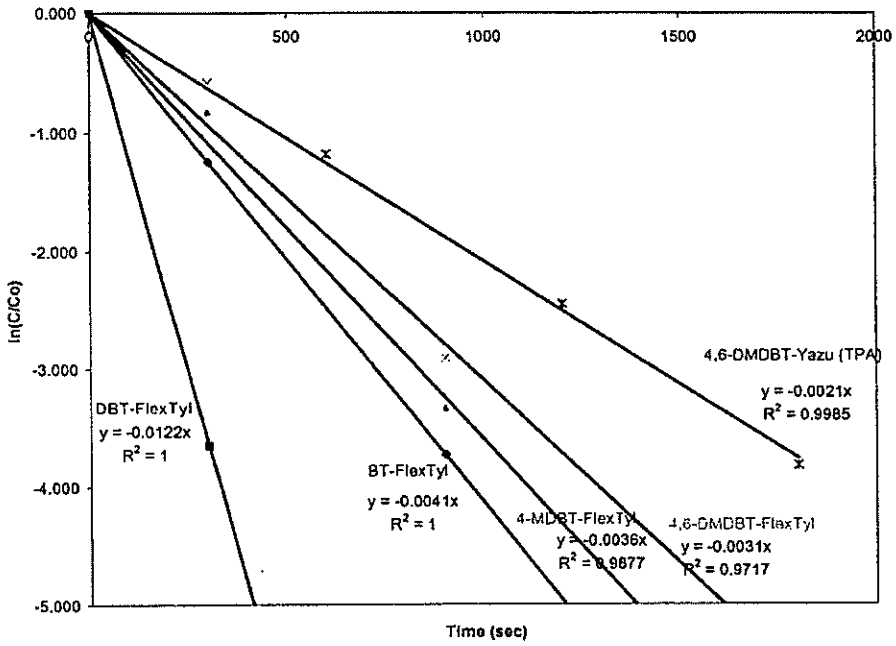

0.000
-1.000
-2.000
-3.000
-4.000
-5.000
ln(C/Co)
500
1000
1500
2000
Time (sec)
4,6-DMDBT-Yazu (TPA)
y = -0.0021x
R² = 0.9985
DBT-FlexTyl
y = -0.0122x
R² = 1
BT-FlexTyl
y = -0.0041x
R² = 1
4-MDBT-FlexTyl
y = -0.0036x
R² = 0.9877
4,6-DMDBT-FlexTyl
y = -0.0031x
R² = 0.9717

FIG. 6

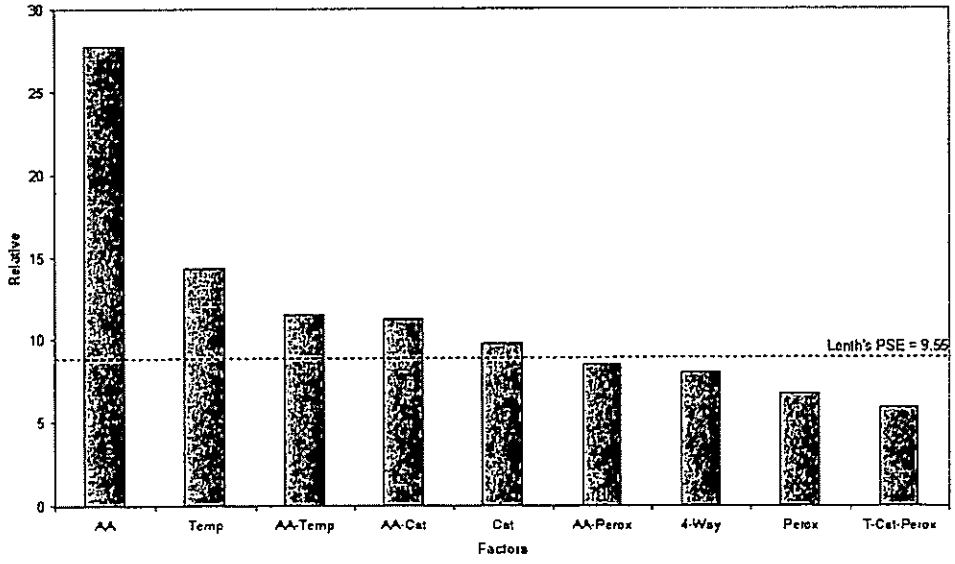

30
25
20
15
10
5
0
Relative
Lenth's PSE = 9.56
AA
Temp
AA-Temp
AA-Cat
Cat
AA-Perox
4-Way
Perox
T-Cat-Perox
Factors

FIG. 7

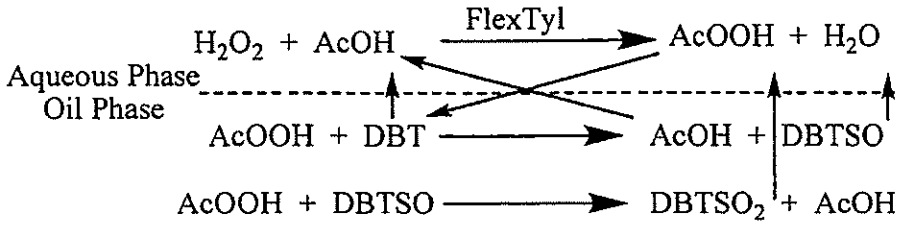
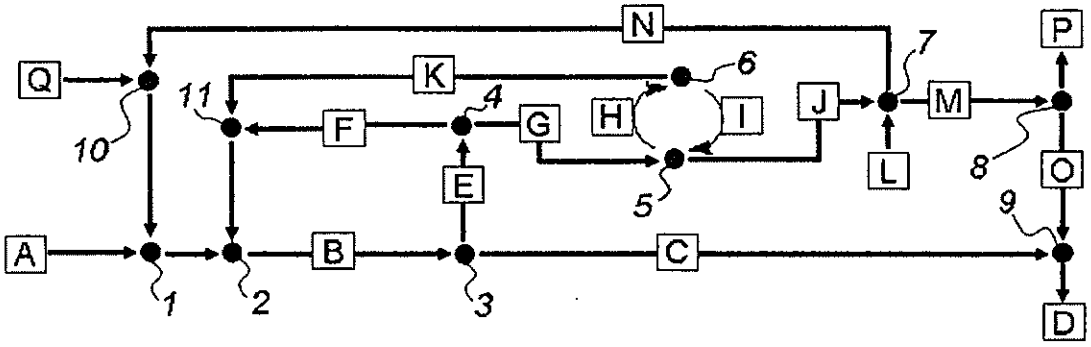

FlexTyl
H_2O_2 + AcOH
AcOOH + H_2O
Aqueous Phase
Oil Phase
AcOOH + DBT
AcOH + DBTSO
AcOOH + DBTSO
$DBTSO_2$ + AcOH

FIG. 8


N
P
Q
K
6
7
11
4
F
G
H
I
J
M
10
E
5
L
8
O
9
A
B
C
1
2
3
D