

Parent POM Platform	Compound formula	Reaction type or reacting group / Conditions tolerated	Reference
Mn-Anderson (P1)	$\text{TBA}_3[\text{MnMo}_6\text{O}_{18}\{(\text{OCH}_2)_3\text{C-4-Py}\}_2]$	Coordination of transition metal ion; CuI Base = triethylamine	1
	$\text{TBA}_3[\text{MnMo}_6\text{O}_{18}\{(\text{OCH}_2)_3\text{C-NH}_2\}_2]$	Imine formation; H(O)C-R	2
	$\text{TBA}_3[\text{MnMo}_6\text{O}_{18}\{(\text{OCH}_2)_3\text{CNH-Ph-4-I}\}_2]$	Mo = N imide bond formation; O = Mo-POM Coupling Agent = N, N'-Dicyclohexylcarbodiimide(DCC)	3
	$\text{TBA}_3[\text{MnMo}_6\text{O}_{18}\{(\text{OCH}_2)_3\text{CNH-Ph-4-I}\}_2]$	Sonogashira coupling; HC≡C-aryl Catalyst = Pd(Ph ₃) ₂ Cl ₂ , CuI Base = Diisopropylamine	4
	$\text{TBA}_3[\text{MnMo}_6\text{O}_{18}\{(\text{OCH}_2)_3\text{CNHC(O)-spiropyran-NO}_2\}\{(\text{OCH}_2)_3\text{C-NH}_2\}]$	Amidation; HOOC-R, Reversible photoisomerization	5
	$\text{TBA}_3[\text{MnMo}_6\text{O}_{18}\{(\text{OCH}_2)_3\text{C-NH-Fmoc}\}\{(\text{OCH}_2)_3\text{C-NH}_2\}]$	Ester bond formation; HOOC-R Base = triethylamine	6
	$\text{TBA}_3[\text{MnMo}_6\text{O}_{18}\{(\text{OCH}_2)_3\text{CNHC(O)CH}_2\text{-N}_3\}_2]$	Cu(I)-Catalyzed azide-alkyne 1,3-dipolar cycloaddition; HC≡C-R Base= N,N-Diisopropylethylamine, Catalyst = CuI	7
	$\text{TBA}_3[\text{MnMo}_6\text{O}_{18}\{(\text{OCH}_2)_3\text{CNHC(O)Ph-4-N}_3\}\{(\text{OCH}_2)_3\text{C-NH}_2\}]$	Amide bond formation and Cu(I)-catalyzed azide-alkyne 1,3-dipolar cycloaddition; HC≡C-R and HOOC-R Base= N,N-Diisopropylethylamine, Catalyst = CuI	7
$\text{TBA}_3[\text{MnMo}_6\text{O}_{18}\{(\text{OCH}_2)_3\text{CNHC(O)CH}_2\text{O-coumarin}\}_2]$	Reversible photodimerization (254/365 nm light)	8	

Parent POM Platform	Compound formula	Reaction type or reacting group / Conditions tolerated	Reference
Lindqvist (P2)	$TBA_2[V_3Mo_3O_{16}((OCH_2)_3CCH_2OH)]$	Esterification; HOOC-R	9
	$TBA_2[V_6O_7(OCH_3)_9(OCH_2)_3C-NH_2]$	Imine formation; R-CHO Coupling Agent = $B(OCH_2CF_3)_3$	10
	$TBA_2[V_6O_{13}\{(OCH_2)_3CCH_2-N_3\}_2]$	Catalytic azide-alkyne 1,3-dipolar cycloaddition; R-C≡C-H Catalyst = CuI, Base = N,N-Diisopropylethylamine	11
	$TBA_2[V_6O_{13}\{(OCH_2)_3CCH_2-SO_3Ph-4-Me\}_2]$	Nucleophilic substitution; NaBr or NaN_3	12
	$TBA_2[V_6O_{13}\{(OCH_2)_3CNHC(O)-3-Py\}_2]$	Coordination to metal (Pd) Reagents = Dimethylacetamide, $[PdCl_2(MeCN)_2]$	13
	$TBA_2[V_6O_{13}\{(OCH_2)_3CCH_2OC(O)-C_6H_4-COOH\}_2]$	Amidation reaction; H_2N-R Catalyst = (4-(N,N-dimethylamino)pyridine), Base = triethylamine	14
	$TBA_2[Mo_6O_{18}\{\equiv N-Ph(2,6-Me)-4-I\}]$	Sonogashira coupling; $HC\equiv C-Ar-R$, $HC\equiv C-Fc$ Catalyst = $Pd(Ph_3)_2Cl_2$, CuI Base = Triethylamine	15
	$TBA_2[Mo_6O_{18}\{\equiv N-Ph(2,6-R')-4-X\}]$, R' = Me, Et, X = Br, I	Heck coupling ; $H_2C=C-R_2$ Catalyst = $[Pd_2(dba)_3]$, Base = PhNHMgBr	16
	$TBA_2[Mo_6O_{18}\{\equiv N-Ar-OH\}]$, Ar-OH = Ph-2-Me-4-OH	Esterification; Ar-OH = Ph-2-Me-4-OH, $HOOC-RO(C(O)-R)_2$ Coupling Agent = DCC	17
	$TBA_2[Mo_6O_{18}\{\equiv N-Ph-4-CH=CH_2\}]$	Copolymerization; $H_2C=CH-Ph-4-Me$	18
	$TBA_2[Mo_6O_{18}\{\equiv N-Ph-4-COOH\}]$	Coordination of transition metal ion (Cu) Reagent = $Cu(CH_3COO)_2$	19

Parent Keggin composition (P3)	Compound composition	Reaction type or reacting group / Conditions tolerated	Reference
[A- α -PW ₉ O ₃₄ {(Si('Bu)-R') ₃ }]	TBA ₃ [A- α -PW ₉ O ₃₄ {(Si('Bu)-R') ₃ }]	Cl ₃ Si- R	20, 21
[A- α -XW ₉ O ₃₄ {(OSi-R) ₃ (E-R')}] X = P, Si; E = Si, Ge	TBA ₃ H[α -SiW ₉ O ₃₄ {(OSi(CH ₂) ₆ -CH=CH ₂) ₃ (Si(CH ₂) ₆ -CH=CH ₂)}]	Copolymerization; H ₂ C=C(Me)C(O)Me Base = triethylamine	22, 23
	TBA ₃ [α -PW ₉ O ₃₄ {(OSi ^t Bu) ₃ (Ge(CH ₂) ₂ -COOH)}]	Amidation; NH ₂ -CH ₂ C \equiv CH	24
[γ -SiW ₁₀ O ₃₆ {O(Si-R) ₂ }]	TBA ₄ [γ -SiW ₁₀ O ₃₆ {O(Si(CH ₂) ₃ OC(O)-C(Me)=CH ₂) ₂ }]	Copolymerization; H ₂ C=C(Me)C(O)OMe Initiator = Azobisisobutyronitrile (AIBN)	25
[α -PW ₁₁ O ₃₉ {O(Si-R) ₂ }]	TBA ₃ [α -PW ₁₁ O ₃₉ {O(Si-CH=CH ₂) ₂ }]	Hydrosylation; H-Si-R ₃	26
	TBA ₃ [α -PW ₁₁ O ₃₉ {O(Si-CH=CH ₂) ₂ }]	Copolymerization; butyl acrylate	27
	TBA ₃ [α -PW ₁₁ O ₃₉ {O(Si-Ph-4-I) ₂ }]	Sonogashira coupling; HC \equiv C-Ar-R Catalyst = Pd(Ph ₃) ₂ Cl ₂ , CuI Base = Triethylamine	28, 29
	TBA ₃ [α -PW ₁₁ O ₃₉ {O(Si-Ph-4-C \equiv C-4'-Py) ₂ }]	Coordination to metal	30
[α -SiW ₁₁ O ₃₉ {O(Si-R) ₂ }]	(Hex ₄ N) ₄ [α -SiW ₁₁ O ₃₉ {O(Si(CH ₂) ₃ -NH ₂) ₂ }]	Imine bond formation; salicylaldehyde Cat = Hex ₄ N	31
	(TBA) ₄ [α -SiW ₁₁ O ₃₉ {O(Si(CH ₂) ₃ -NH ₂) ₂ }]	HOOC-(azobenzene) _n	32

Parent Wells-Dawson Composition (P4)	Compound composition	Reaction type or reacting group / Conditions tolerated	Reference
$[\alpha_2\text{-P}_2\text{W}_{17}\text{O}_{61}\{\text{O}(\text{Si-R})_2\}]$	$(\text{Me}_2\text{NH}_2)_6[\alpha_2\text{-P}_2\text{W}_{17}\text{O}_{61}\{\text{O}(\text{Si}(\text{CH}_2)_3\text{O}(\text{O})\text{CC}(\text{Me})=\text{CH}_2)_2\}]$	Copolymerization; $\text{H}_2\text{C}=\text{C}(\text{Me})\text{C}(\text{O})\text{OMe}$	33, 34
	$\text{TBA}_6[\alpha_2\text{-P}_2\text{W}_{17}\text{O}_{61}\{\text{O}(\text{Si-Ph-4-I})_2\}]$	Sonogashira coupling; $\text{HC}\equiv\text{C-Ar-R}$ Catalyst = $\text{Pd}(\text{Ph}_3)_2\text{Cl}_2$, CuI Base = Triethylamine	35-37
	$\text{TBA}_6[\alpha_2\text{-P}_2\text{W}_{17}\text{O}_{61}\{\text{O}(\text{Si-Ph-4-C}\equiv\text{C-Ph-terpyridyl})_2\}]$	Coordination of transition metal ion	38
	$\text{TBA}_6[\alpha_2\text{-P}_2\text{W}_{17}\text{O}_{61}\{\text{O}(\text{SiPh-4-CH}_2\text{-N}_3)_2\}]$	$\text{Cu}(\text{I})$ -Catalyzed azide-alkyne 1,3-dipolar cycloaddition; $\text{HC}\equiv\text{CR}$ Catalyst = CuSO_4 , Ascorbic acid	39
$[\text{P}_2\text{W}_{15}\text{V}_3\text{O}_{59}\{(\text{OCH}_2)_3\text{CNHCO-R}\}]$	$\text{TBA}_5\text{H}[\text{P}_2\text{W}_{15}\text{V}_3\text{O}_{59}\{(\text{OCH}_2)_3\text{CNHC}(\text{O})\text{-C}(\text{Me})=\text{CH}_2\}]$	Copolymerization; $\text{H}_2\text{C}=\text{C}(\text{Me})\text{C}(\text{O})\text{OMe}$ Initiator = Azobisisobutyronitrile (AIBN)	40
	$\text{TBA}_6[\text{P}_2\text{W}_{15}\text{V}_3\text{O}_{59}\{(\text{OCH}_2)_3\text{CNHC}(\text{O})\text{CH}_2\text{-N}_3\}]$	$\text{Cu}(\text{I})$ -Catalyzed azide-alkyne 1,3-dipolar cycloaddition; $\text{HC}\equiv\text{C-R}$ Catalyst = $\text{Cu}(\text{I})(\text{MeCN})\text{PF}_4$, Base = <i>N,N</i> Diisopropylethylamine	41
	$\text{TBA}_5\text{H}[\text{P}_2\text{W}_{15}\text{V}_3\text{O}_{59}\{(\text{OCH}_2)_3\text{CNHC}(\text{O})\text{-C}(\text{Me}_2)\text{Br}\}]$	Copolymerization with styrene; $\text{CH}_2=\text{CH-C}_6\text{H}_5$ CuBr , Pentamethyldiethylenetriamine	42
	$\text{TBA}_6[\text{P}_2\text{W}_{15}\text{V}_3\text{O}_{59}\{(\text{OCH}_2)_3\text{CNHC}(\text{O})\text{CH}_2\text{O-coumarin}\}]$	Reversible photodimerization (254/365 nm light)	43

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