

Конденсирующие вещества

Технические характеристики

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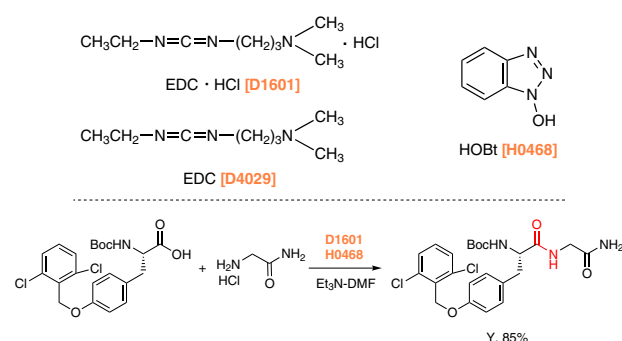
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Condensing Agents

Esterification and amidation have been regarded as one of the most basic reactions in organic chemistry. Among them, esterification under an acidic conditions has been known for more than 100 years,¹⁾ the conditions of which being dependent on Le Chatelier's principle. To drive the reaction to completion, water is removed as the reaction progresses, usually via a Dean-Stark trap or a dehydrating reagent. However, this method is often ineffective when applied to thermally unstable materials. Milder conditions and condensing agents have been developed to surmount this problem. For amidation, the activation of a carboxylic acid is key with the amide bond formed through the nucleophilic addition of amines to an activated carboxylic acid. However, if the reactivity of the activated carboxy group is too high, epimerization at α -position can occur. Reagents that do not impart epimerization have since been developed to avoid this potential issue. With significant research into esterification and amidation having been conducted for many years, many condensing agents which have both high reactivity and control of epimerization are readily available. Furthermore, many reviews of these methods and reagents have been reported.²⁾ Applications and references for these varied methods are available on each of TCI's product pages.

● EDC + HOBt

Since the first report of a condensation reaction utilizing *N,N'*-dicyclohexylcarbodiimide (DCC) [D0436] in 1950's,³⁾ many carbodiimide reagents have been developed. Among them, 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide (EDC) [D1601], and [D4029] are favored as the byproducts are easily removed by partition. EDC can be used together with 1-hydroxybenzotriazole (HOBt)⁴⁾ [H0468] which is one of the most used conditions for condensations.

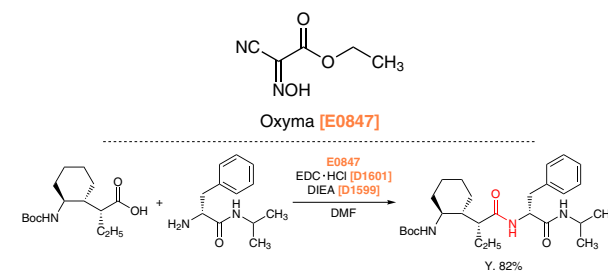


● PS-DCC

It often becomes troublesome to remove byproducts when applying to condensing agents. Removal of byproducts from condensation reactions is one of the more troublesome aspects of the reactions. Dicyclohexylurea, a byproduct from DCC, is notoriously difficult to remove. However, polymer supported PS-DCC [C2141] has the advantage of easily removal by simple filtration and is often employed in the total synthesis of natural products.⁵⁾

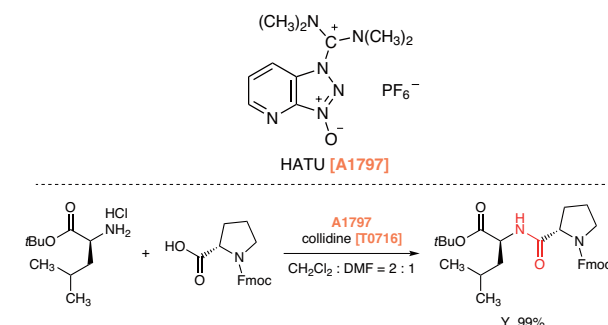
● Oxyma

1,2,3-Triazol derivatives are utilized in the synthesis of active esters and are frequently used with carbodiimides, but are potentially explosive if dried. The reagent oxyma [E0847] bears the same reactivity to that of triazoles with a minimized explosion risk.⁶⁻⁸⁾



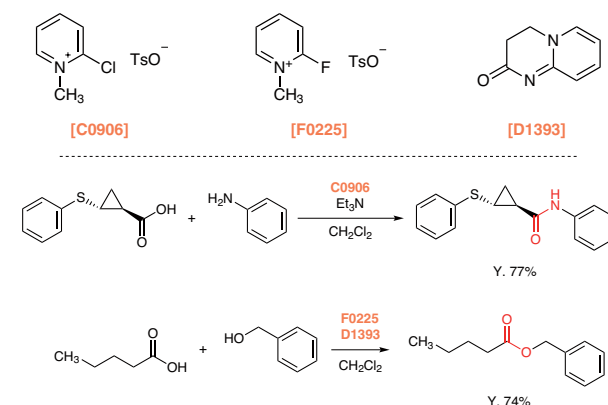
● HATU

Uronium salts represented by HATU [A1797] have been known as condensing agents with both high reactivity and suppressed epimerization.^{9,10)}



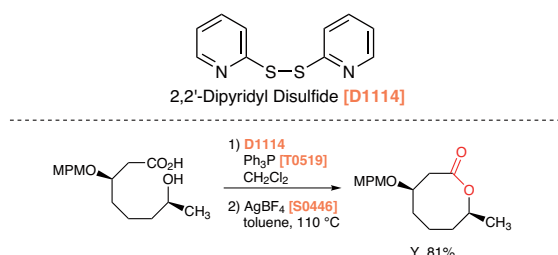
● Mukaiyama Condensing Agents

Mukaiyama *et al.* reported 2-chloro-1-methylpyridinium *p*-toluenesulfonate [C0906] and 2-fluoro-1-methylpyridinium *p*-toluenesulfonate [F0225] which were utilized in condensation reactions.^{11,12)} In this reaction, either conventional organic bases such as triethylamine or acid captor H [D1393] can be used as an acid sequestrant.



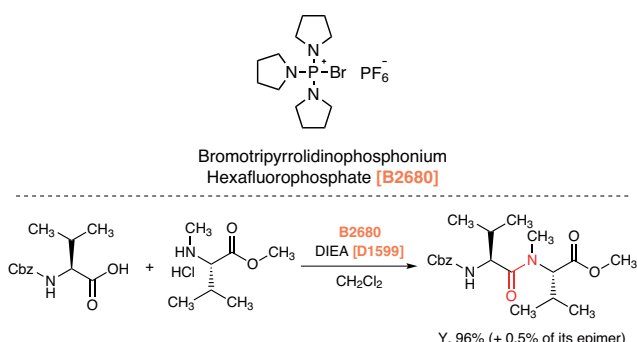
Corey-Nicolaou macrolactonization

2,2'-Dipyridyl disulfide [D1114] is useful for the lactonization and is conducted under mild conditions. Corey and Nicolaou have reported this method in several total syntheses making use of this reagent.^{13,14}



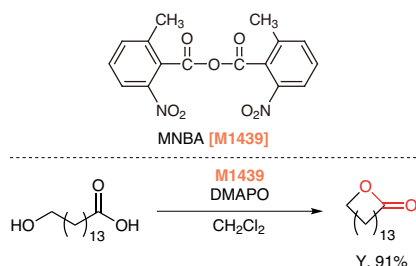
Bromotripyrrolidinophosphonium Hexafluorophosphate

Phosphonium salts such as bromotripyrrolidinophosphonium hexafluorophosphate [B2680] also have utility in condensation reactions.¹⁵ When using these salts, additives like HOBT are not necessary. Furthermore, the rate of epimerization is low and N-methyl amino acid derivatives, which are difficult to impart reactivity on, are applicable. In this way, these salts are anticipated to be used more frequently in further research.



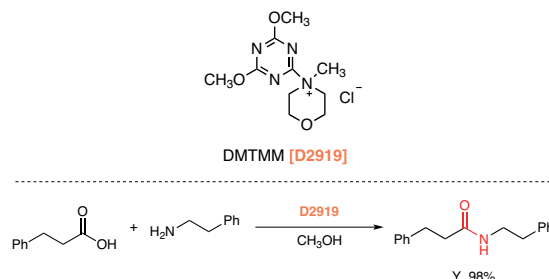
Shiina Macrolactonization

Shiina *et al.* have reported that 2-methyl-6-nitrobenzoic anhydride (MNBA) [M1439] affords esters or amides in high yields from mostly equimolar carboxylic acid and alcohols or amines under basic conditions.^{16,17} This method is also utilized in macrolactonizations.



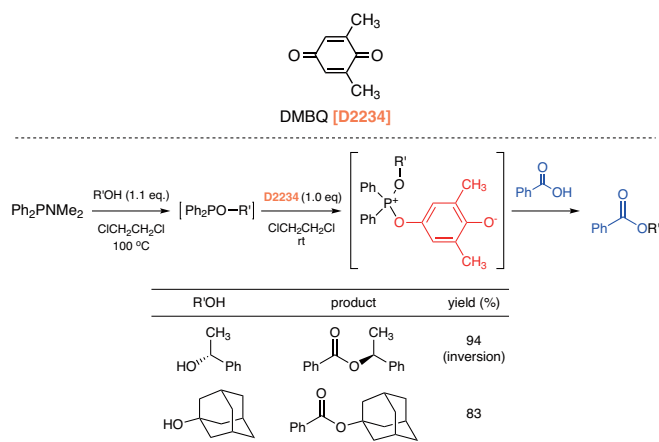
DMTMM

Kunishima *et al.* have reported the utility of 4-(4,6-dimethoxy-1,3,5-triazin-2-yl)-4-methylmorpholinium chloride (DMTMM) [D2919] as a condensing reagent.^{18,19} This reagent has some advantages: amidation proceeds selectively even in alcohol solvent and the byproducts are easy to remove. D2919 can be used as a powerful condensing reagent.²⁰



Mukaiyama Redox Condensation

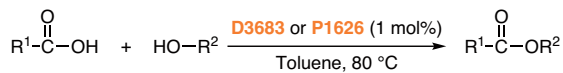
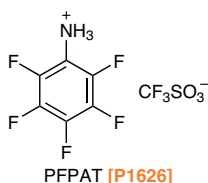
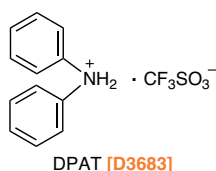
Mukaiyama *et al.* have reported a redox condensation reaction using dihydroquinone derivatives such as 2,6-dimethyl-1,4-benzoquinone (DMBQ) [D2234].^{21,22} In this reaction, tertiary alcohols with high steric hindrance can react and afford products with stereoinversion. Furthermore, this reaction is even applicable to 1-adamantanol, the structure of which being highly resistant to stereoinversion.



Organocatalysts for Condensation Reactions

DPAT [D3683] is a useful esterification catalyst developed by Tanabe *et al.* affording esters in high yields from equimolar amounts of carboxylic acids and alcohols under mild reaction condition.^{23,24} In this case, desired esters can be obtained by simple operation without addition of dehydrating agent and azeotropic water removal. There is also a report using fluorous solvent, in which DPAT is useful for the substrate with high steric hindrance.²⁵

PFPAT [P1626] shows higher activity than DPAT and it can be applied widely to esterification and lactonization.²⁴ Furthermore, PFPAT can be removed after work-up; washing with NaOH aqueous solution removed CF₃SO₃H, followed by distillation of C₆F₅NH₂.



R ¹	R ²	catalyst	time (h)	Y. (%)
PhCH ₂ CH ₂ —	CH ₂ =CH(CH ₂) ₈ —	D3683	8	96
PhCH ₂ CH ₂ —	CH ₂ =CH(CH ₂) ₈ —	P1626	3	96
^t Bu—	CH ₃ (CH ₂) ₇ —	D3683	24	92
^t Bu—	CH ₃ (CH ₂) ₇ —	P1626	6	90

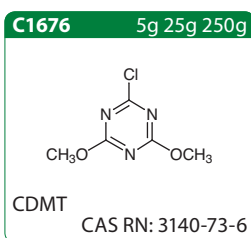
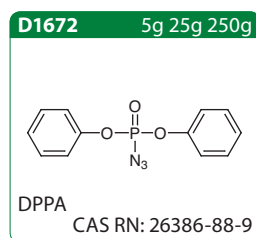
References

- E. Fischer, A. Speier, *Ber.* **1895**, 28, 3252.
- C. A. G. N. Montalbetti, V. Falque, *Tetrahedron* **2005**, 61, 10827.
- J. C. Sheehan, G. P. Hess, *J. Am. Chem. Soc.* **1955**, 77, 1067.
- Y. Shimohigashi, J. W. Dunning Jr., A. J. Kolar, C. H. Stammer, *Int. J. Peptide Protein Res.* **1983**, 21, 202.
- R. Subirós-Funosas, R. Prohens, R. Barbas, A. El-Faham, F. Albericio, *Chem. Eur. J.* **2009**, 15, 9394.
- S. N. Khattab, *Chem. Pharm. Bull.* **2010**, 58, 501.
- S. N. Khattab, *Bull. Chem. Soc. Jpn.* **2010**, 83, 1374.
- B. F. Fisher, L. Guo, B. S. Dolinar, I. A. Guzei, S. H. Gellman, *J. Am. Chem. Soc.* **2015**, 137, 6484.
- L. A. Carpino, *J. Am. Chem. Soc.* **1993**, 115, 4397.
- R. N. Daniels, B. J. Melancon, E. A. Wang, B. C. Crews, L. J. Marnett, G. A. Sulikowski, C. W. Lindsley, *J. Org. Chem.* **2009**, 74, 8852.
- T. Mukaiyama, Y. Aikawa, S. Kobayashi, *Chem. Lett.* **1976**, 5, 57.
- K. Tanaka, I. Funaki, A. Kaji, K. Minami, M. Sawada, T. Tanaka, *J. Am. Chem. Soc.* **1988**, 110, 7185.
- E. J. Corey, K. C. Nicolaou, *J. Am. Chem. Soc.* **1974**, 96, 5614.
- K. R. Buszek, Y. Jeong, N. Sato, P. C. Still, P. L. Muiño, I. Ghosh, *Synth. Commun.* **2001**, 31, 1781.
- J. Coste, E. Frérot, P. Jouin, B. Castro, *Tetrahedron Lett.* **1991**, 32, 1967.
- I. Shiina, R. Ibuka, M. Kubota, *Chem. Lett.* **2002**, 31, 286.
- I. Shiina, M. Kubota, R. Ibuka, *Tetrahedron Lett.* **2002**, 43, 7535.
- M. Kunishima, C. Kawachi, J. Monta, K. Terao, F. Iwasaki, S. Tani, *Tetrahedron* **1999**, 55, 13159.
- M. Kunishima, C. Kawachi, K. Hioki, K. Terao, S. Tani, *Tetrahedron* **2001**, 57, 1551.
- T. Mori, S. Higashibayashi, T. Goto, M. Kohno, Y. Satouchi, K. Shinko, K. Suzuki, S. Suzuki, H. Tohmiya, K. Hashimoto, M. Nakata, *Chem. Asian J.* **2008**, 3, 984.
- T. Shintou, T. Mukaiyama, *J. Am. Chem. Soc.* **2004**, 126, 7359.
- T. Shintou, W. Kikuchi, T. Mukaiyama, *Bull. Chem. Soc. Jpn.* **2003**, 76, 1645.
- K. Wakasugi, T. Misaki, K. Yamada, Y. Tanabe, *Tetrahedron Lett.* **2000**, 41, 5249.
- T. Funatomi, K. Wakasugi, T. Misaki, Y. Tanabe, *Green Chem.* **2006**, 8, 1022.
- B. Gacem, G. Jenner, *Tetrahedron Lett.* **2003**, 44, 1391.

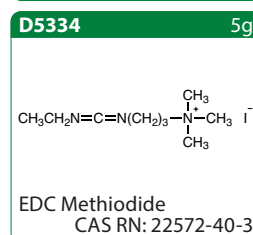
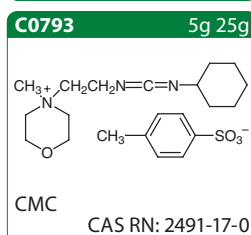
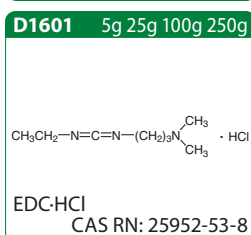
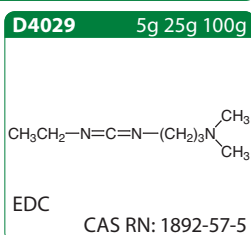
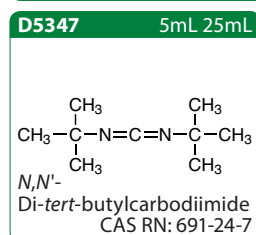
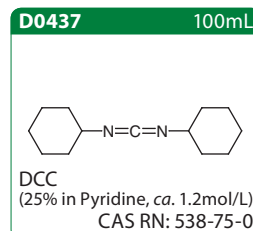
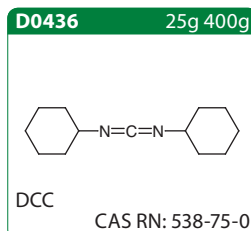
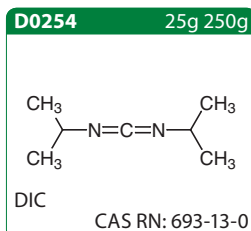
Active Esters, Additives

H1304 200mg 1g Sulfo-NHS CAS RN: 106627-54-7	H0395 25g 100g 500g N-Hydroxyphthalimide CAS RN: 524-38-9	B0249 25g N-Hydroxysuccinimide [Coupling Reagent for Peptide] CAS RN: 6066-82-6	H0623 25g 100g 500g N-Hydroxysuccinimide CAS RN: 6066-82-6	D1662 5g 25g DSC CAS RN: 74124-79-1
H1304 200mg 1g Sulfo-NHS CAS RN: 106627-54-7	H0395 25g 100g 500g N-Hydroxyphthalimide CAS RN: 524-38-9	M3571 1g 5g 4-Methyl-N-hydroxyphthalimide CAS RN: 173962-59-9	M3572 1g 5g 4-Methoxy-N-hydroxyphthalimide CAS RN: 214754-50-4	H1765 1g 5g TCNHPI CAS RN: 85342-65-0

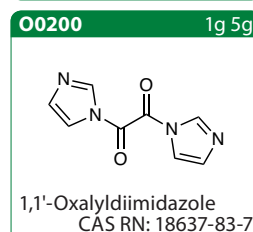
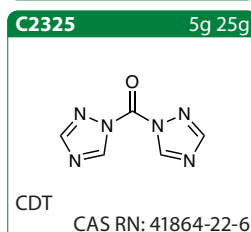
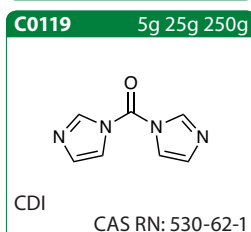
H0528 25g 100g 250g <i>N</i> -Hydroxy-5-norbornene-2,3-dicarboximide CAS RN: 21715-90-2	H0468 25g 200g HOBt Monohydrate CAS RN: 80029-43-2	H1454 1g 5g 1-Hydroxy-6-(trifluoromethyl)-benzotriazole CAS RN: 26198-21-0	E0901 1g 5g Ethyl 1-Hydroxy-1H-1,2,3-triazole-4-carboxylate CAS RN: 137156-41-3	D2039 10g 25g 3-Hydroxy-4-ketobenzotriazine CAS RN: 28230-32-2
D3262 5g DEPBT CAS RN: 165534-43-0	E0847 25g 100g Oxyma CAS RN: 3849-21-6	D1114 5g 25g 250g 2,2'-Dithiodipyridine CAS RN: 2127-03-9	C0903 25g 2-Chloro-1-methylpyridinium iodide CAS RN: 14338-32-0	C0906 25g 2-Chloro-1-methylpyridinium <i>p</i> -Toluenesulfonate CAS RN: 7403-46-5
B1036 5g 25g 2-Bromo-1-ethylpyridinium Tetrafluoroborate CAS RN: 878-23-9	F0225 5g 25g 2-Fluoro-1-methylpyridinium <i>p</i> -Toluenesulfonate CAS RN: 58086-67-2	H0672 25g 2-Hydroxypyridine <i>N</i> -Oxide CAS RN: 13161-30-3	E0363 25g EEDQ CAS RN: 16357-59-8	P1768 1g 5g Nicotinic Anhydride CAS RN: 16837-38-0
M1439 1g 5g 25g MNBA CAS RN: 434935-69-0	T1593 10g TFBA CAS RN: 25753-16-6	F1184 1g FTFBA CAS RN: 2118332-08-2	P0919 10g 25g Pentafluorophenol CAS RN: 771-61-9	P2231 1g 5g Pentafluorophenyl 4-Nitrobenzenesulfonate CAS RN: 244633-31-6
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T1985 5g 25g 1-Tosylimidazole CAS RN: 2232-08-8	T0459 25g 100g 500g 2,4,6-Triisopropylbenzene-sulfonyl Chloride CAS RN: 6553-96-4	M1186 5g 25g 2,4-Mesitylenedisulfonyl Dichloride CAS RN: 68985-08-0	N0477 1g 5g 3-Nitro-1,2,4-triazole CAS RN: 24807-55-4	B0832 1g 5g Woodward's Reagent L CAS RN: 10513-45-8
C1242 5g 25g Diethyl Cyanophosphonate CAS RN: 2942-58-7	D2159 1g 5g Dimethylthiophosphinoyl Chloride CAS RN: 993-12-4	C1415 5g 10g 25g Diphenylphosphinic Chloride CAS RN: 1499-21-4	B1213 5g 25g BOP-Cl CAS RN: 68641-49-6	P2726 1g 5g FDPP CAS RN: 138687-69-1
B3604 5g Bis(pentafluorophenyl) Carbonate CAS RN: 59483-84-0	C1481 5g 25g Bis(4-nitrophenyl) Carbonate CAS RN: 5070-13-3	P2188 200mg 1g Pentafluorophenyl Triflate CAS RN: 60129-85-3	T0681 5g 25g 4-Nitrophenyl Trifluoroacetate CAS RN: 658-78-6	C0178 25g 100g 500g IBCF CAS RN: 543-27-1



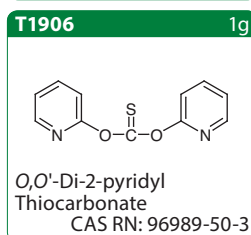
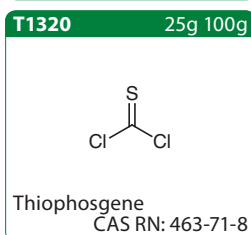
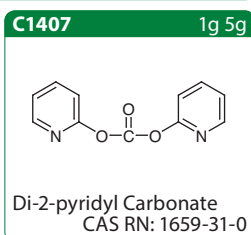
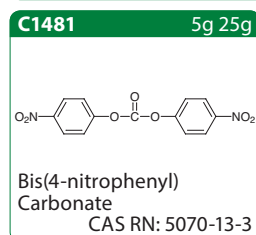
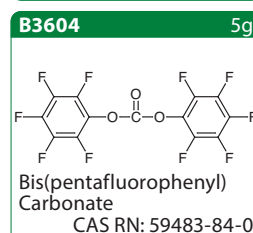
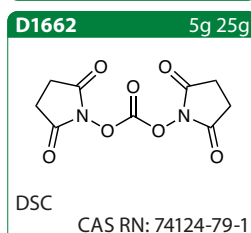
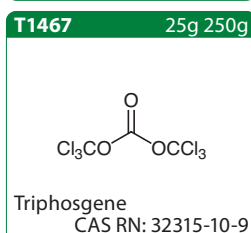
Carbodiimides



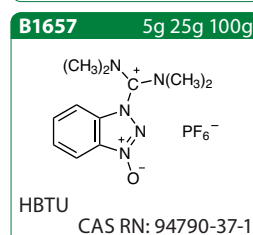
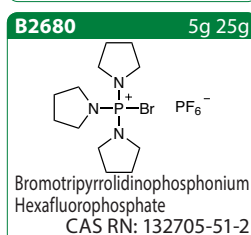
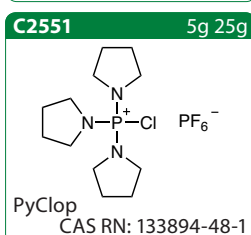
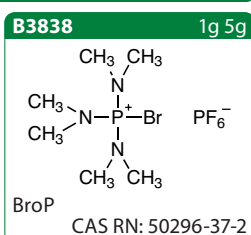
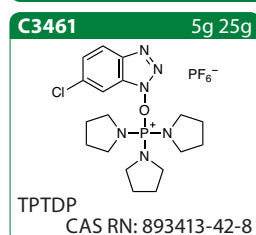
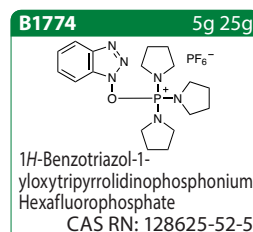
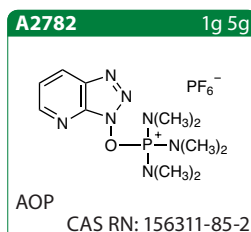
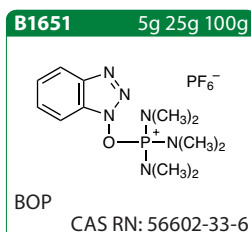
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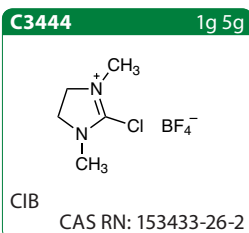
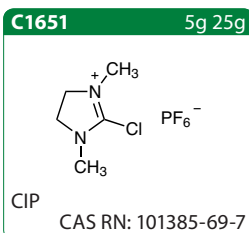
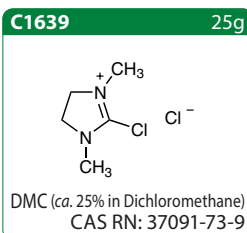
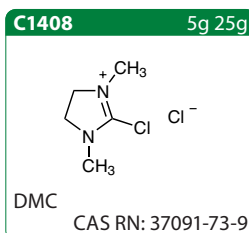
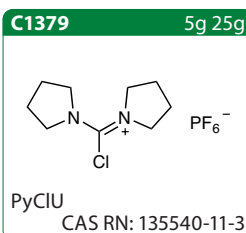
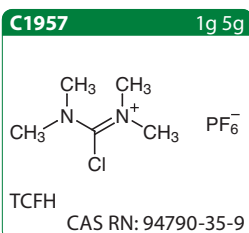
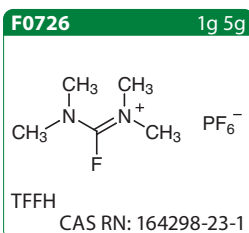
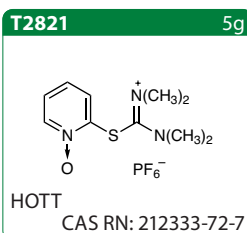
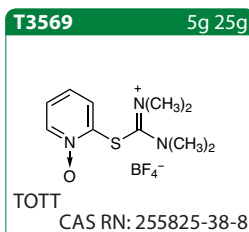
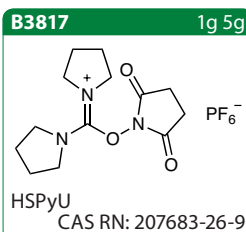
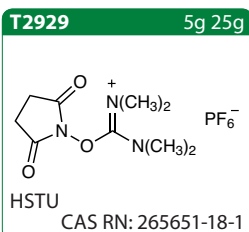
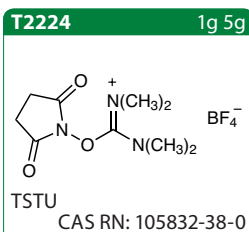
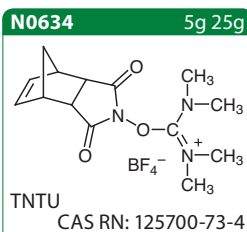
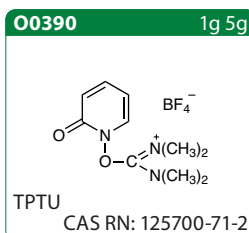
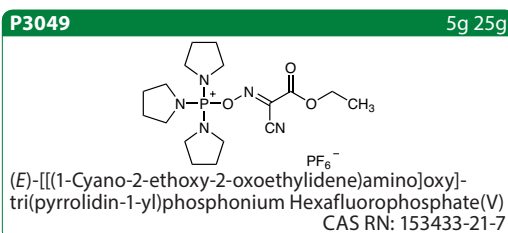
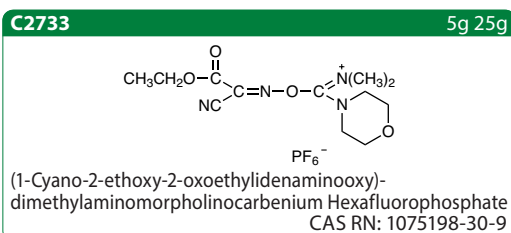
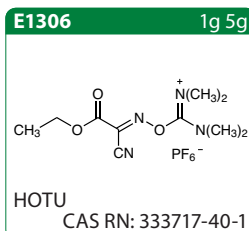
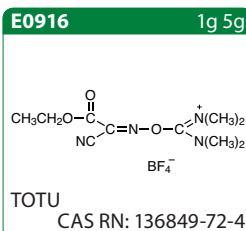
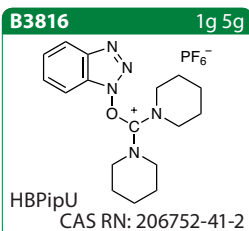
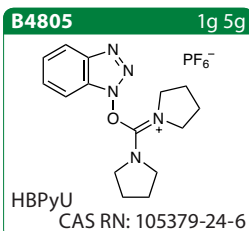
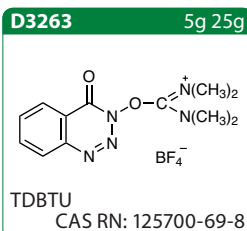
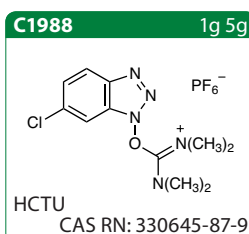
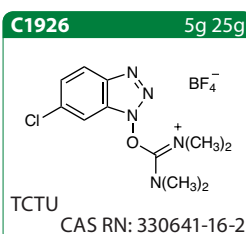
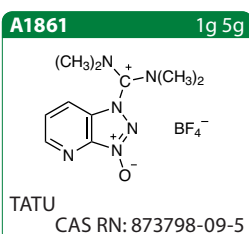
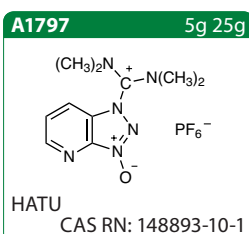
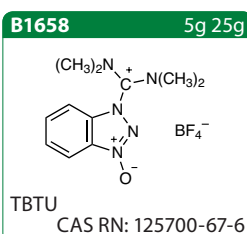


Phosgene Derivatives

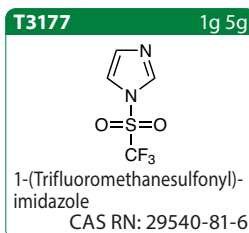
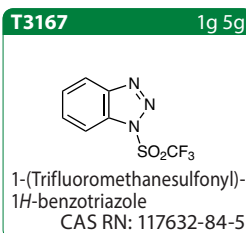
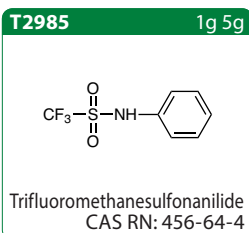
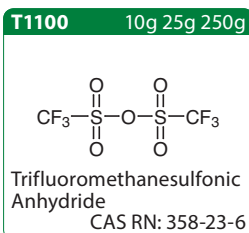
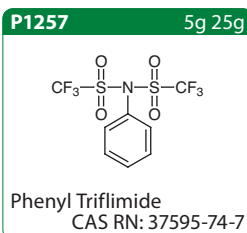
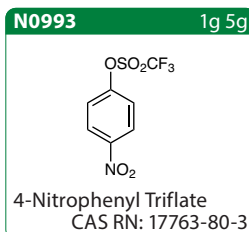
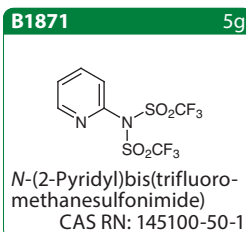
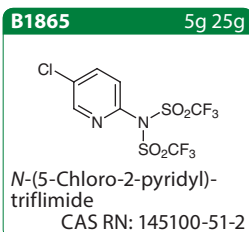


Phosphonium Salts, Uronium Salts, Formamidinium Salts

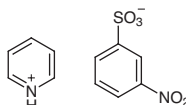
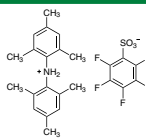
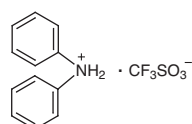
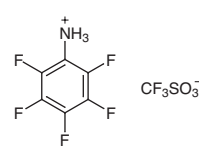
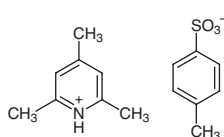
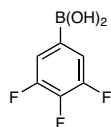
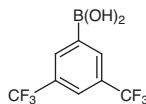
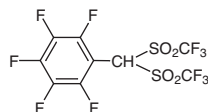
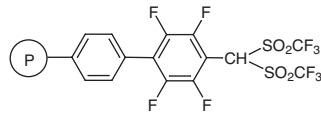
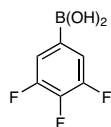
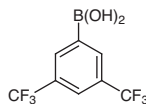
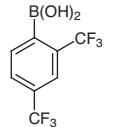
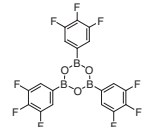
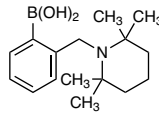
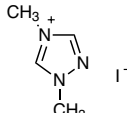
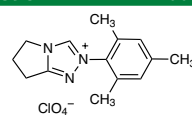
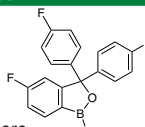
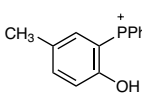
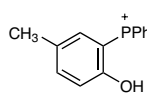
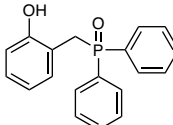
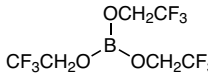
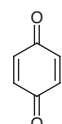
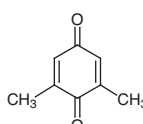
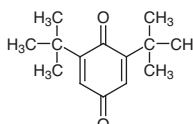
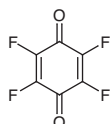
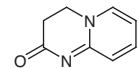
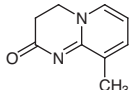
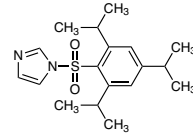


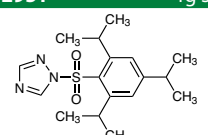
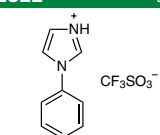
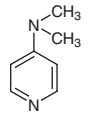
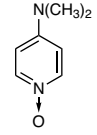
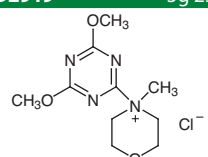
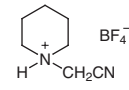
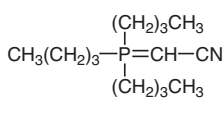
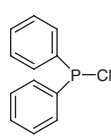
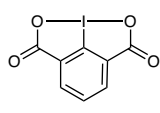
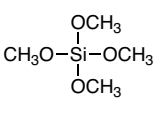
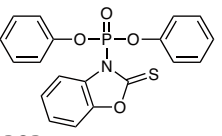
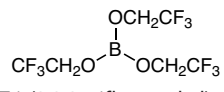


Triflating Reagent



Condensing Agents

T3592 1g 5g CF₃SO₂Br Triflyl Bromide CAS RN: 15458-53-4	T1027 5g 25g CF₃SO₂Cl Triflyl Chloride CAS RN: 421-83-0			
Condensation Organocatalysts				
P0941 5g 25g  Pyridinium 3-Nitrobenzenesulfonate CAS RN: 84752-61-4	D3293 1g 5g  Dimesitylammonium Pentafluorobenzenesulfonate CAS RN: 850629-65-1	D3683 1g 5g 25g  DPAT CAS RN: 164411-06-7	P1626 1g 5g 25g  PFPAT CAS RN: 912823-79-1	T1122 25g  CPTS CAS RN: 59229-09-3
T2300 5g 25g  (3,4,5-Trifluorophenyl)-boronic Acid CAS RN: 143418-49-9	B1886 1g 5g 25g  3,5-Bis(trifluoromethyl)-phenylboronic Acid CAS RN: 73852-19-4	B2291 100mg 1g  α,α-Bis(trifluoromethanesulfonyl)-2,3,4,5,6-pentafluorotoluene CAS RN: 405074-81-9	B2292 100mg  Bis(trifluoromethanesulfonyl)methyltetrafluorophenyl Polystyrene Resin cross-linked with 2% DVB (200-400mesh) (0.9-1.2mmol/g)	
T2300 5g 25g  (3,4,5-Trifluorophenyl)-boronic Acid CAS RN: 143418-49-9	B1886 1g 5g 25g  3,5-Bis(trifluoromethyl)-phenylboronic Acid CAS RN: 73852-19-4	B3022 1g 5g  2,4-Bis(trifluoromethyl)-phenylboronic Acid CAS RN: 153254-09-2	T1929 1g 5g  2,4,6-Tris(3,4,5-trifluorophenyl)boroxin CAS RN: 223440-94-6	T2908 1g  2-[(2,2,6,6-Tetramethyl-1-piperidyl)-methyl]phenylboronic Acid CAS RN: 815581-79-4
D3962 1g 5g  1,4-Dimethyl-1,2,4-triazolium Iodide CAS RN: 120317-69-3	D3982 100mg  6,7-Dihydro-2-mesityl-5H-pyrrolo[2,1-c]-1,2,4-triazolium Perchlorate CAS RN: 1334529-08-6	F1259 100mg  5-Fluoro-3,3-bis(4-fluorophenyl)-benzo[c][1,2]oxaborol-1(3H)-ol CAS RN: 2366993-30-6	H1748 1g 5g  MeTAPS-Br CAS RN: 2005487-65-8	H1749 1g 5g  MeTAPS-I CAS RN: 2005487-70-5
H1763 1g 5g  2-[(Diphenylphosphoryl)-methyl]phenol CAS RN: 70127-50-3	T3010 1g  Tris(2,2,2-trifluoroethyl) Borate CAS RN: 659-18-7			
Others				
B0887 25g 500g  1,4-Benzoquinone CAS RN: 106-51-4	D2234 1g 5g 25g  DMBQ CAS RN: 527-61-7	D2256 5g 25g  2,6-Di-tert-butyl-p-quinone CAS RN: 719-22-2		
T0790 1g 5g  Fluoranil CAS RN: 527-21-9	D1393 5g 25g  Acid Captor H CAS RN: 5439-14-5	M0670 25g  Acid Captor 9M CAS RN: 61751-44-8	T0340 25g 100g 500g  1,2,4-Triazole CAS RN: 288-88-0	T1410 5g 25g  1-(2,4,6-Triisopropylbenzenesulfonyl)imidazole CAS RN: 50257-40-4

T2951 1g 5g  1-(2,4,6-Trisopropylbenzenesulfonyl)-1,2,4-triazole CAS RN: 54230-60-3	P2822 5g 25g  1-Phenyl-1H-imidazol-3-ium Triflate CAS RN: 361447-81-6	D1450 25g 100g 500g  DMAP CAS RN: 1122-58-3	D3220 1g 5g  DMAPO CAS RN: 1005-31-8	D2919 5g 25g  DMTMM CAS RN: 3945-69-5
C2421 5g  1-(Cyanomethyl)piperidinium Tetrafluoroborate CAS RN: 434937-12-9	C1500 1g 5g 25g  Tsunoda Reagent CAS RN: 157141-27-0	C0597 25g 100g 500g  Chlorodiphenylphosphine CAS RN: 1079-66-9	I0865 1g  Iodosodilactone CAS RN: 2902-68-3	T0588 25g 100g 500g  TMOS CAS RN: 681-84-5
D2038 5g 25g  DBOP CAS RN: 111160-56-6	T3010 1g  Tris(2,2,2-trifluoroethyl) Borate CAS RN: 659-18-7	R0274 10each Reagents for Condensation Reactions (EDCI-HCl, HOBt-H ₂ O) (HPMC encapsulated)		

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