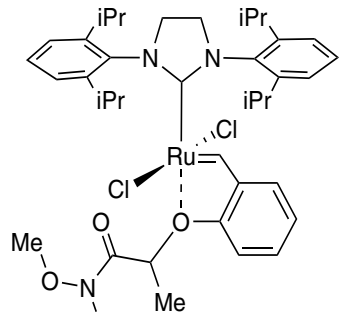
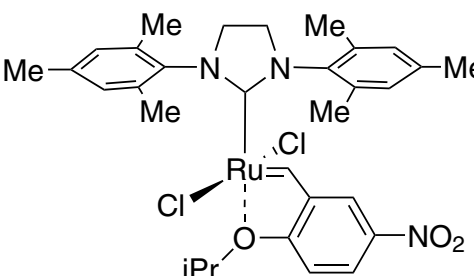
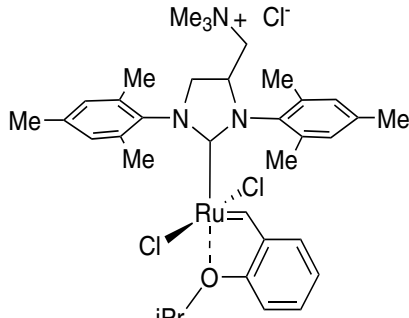
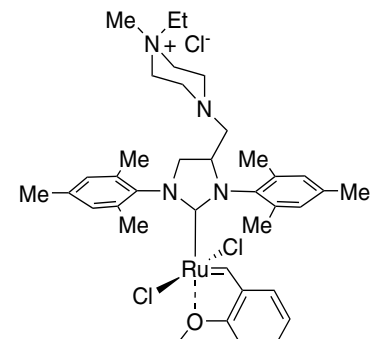
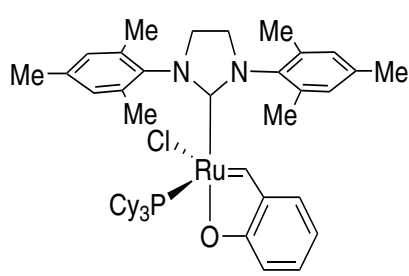
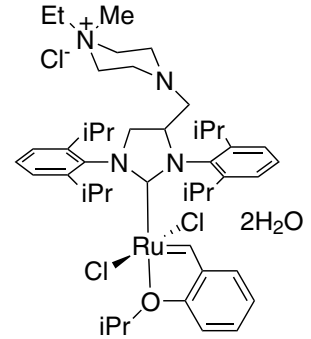
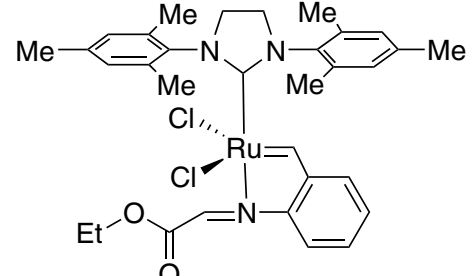
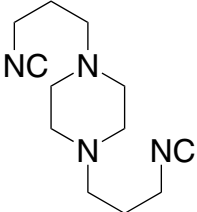


Sold in collaboration with Apeiron Synthesis, Inc.

 <p>GreenCat 44-0750</p>	 <p>nitro-Grela 44-0758</p>	 <p>StickyCat Cl 44-0765</p>
 <p>AquaMet 44-0768</p>	 <p>LatMet 44-0753</p>	 <p>FixCat 44-0759</p>
 <p>HeatMet 44-0760</p>	 <p>SnatchCat Metal Scavenger 07-2203</p>	

96-0400 Apeiron Ruthenium Metathesis Catalyst Kit

Contains 1x100mg of each of the following products:

44-0750, 44-0758, 44-0765, 44-0768, 44-0753, 44-0759 and 44-0760

This kit also includes 1g of metal scavenger, 07-2203.

Components are available for individual sale as well.

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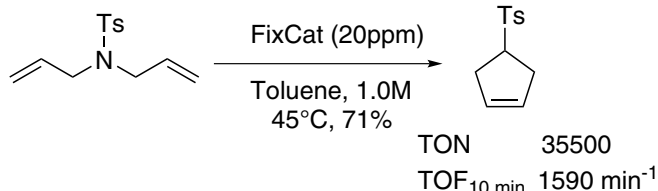
44-0759 **(1,3-Bis(2,6-diisopropylphenyl)-4-((4-ethyl-4-methylpiperzain-1-ium-1-yl)methyl)imidazolidin-2-ylidene) (2-isopropoxybenzylidene)ruthenium(II)dichloride chloride dihydrate FixCat** [1799947-97-9] 100mg
500mg
C₄₅H₇₁Cl₃N₄O₃Ru; FW: 887.47 (923.50); green pwr.

Note: U.S. Patent 61/603,790.

Technical Note:

1. Fixcat is a stable olefin metathesis initiator with very good solubility in neat water. The product efficiently promotes ringclosing, cross, and enyne metathesis reactions of water soluble substrates. Suitable for homogeneous and heterogeneous in batch or flow setup.

The Fixcat structure was also optimized to serve as a versatile and very stable catalyst, easily immobilized on solid supports. In its SCA-15 supported version, it showed exceptional efficiency in promoting ring-closing and cross-metathesis reactions, in both batch and continuous flow setups. Fix Cat is also applicable as a homogeneous catalyst, where compatible solvents include alcohols and halogenated solvents



Tech. Note (1)
Ref. (1)

Reference:

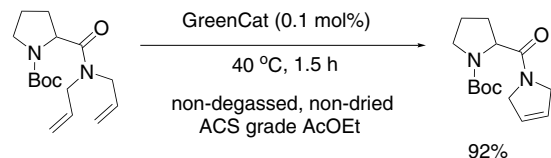
1. *ChemSus Chem.*, **2015**, 8, 4139.

44-0750 **[1,3-Bis(2,6-di-i-propylphenyl)imidazolidin-2-ylidene]{2-[[1-(methoxy(methyl)amino)-1-oxopropan-2-yl]oxy]benzylidene}ruthenium(II) dichloride GreenCat** [1448663-06-6] 100mg
500mg
C₃₉H₅₃Cl₂N₃O₃Ru; FW: 783.33; green pwr.

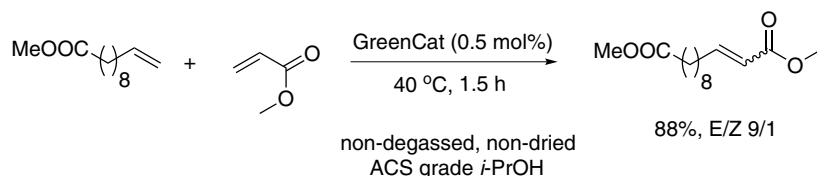
Note: U.S. Patent 61/666,009, PCT/EP2013/062435

Technical Note:

1. Efficient, durable and reusable olefin metathesis catalyst with a high affinity to silica gel.



Tech. Note (1)
Ref. (1)



Tech. Note (1)
Ref. (1)

Reference:

1. *Tetrahedron*, **2013**, 69, 7408.

44-0768 **[1,3-Bis(2,4,6-trimethylphenyl)-4-[(4-ethyl-4-methylpiperazin-1-ium-1-yl)methyl]imidazolidin-2-ylidene]-(2-i-propoxybenzylidene)dichlororuthenium(II) chloride AquaMet** [1414707-08-6] 100mg
500mg
C₃₉H₅₅Cl₃N₄ORu; FW: 803.31; green pwr.

Note: U.S. Patent 61/603,790, PCT/EP2013/053967.

Technical Note:

1. This is a highly active catalyst for olefin metathesis in water.
2. This catalyst is used as linker free heterogeneous metathesis catalysts after immobilization on silica or siliceous mesoporous molecular sieves. TON of ~16000 for the RCM of (-)-β-citronellene are reported. (Ref. 2)

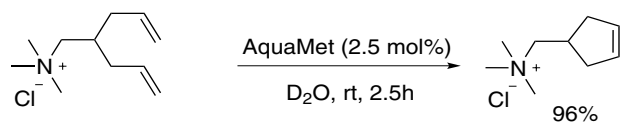
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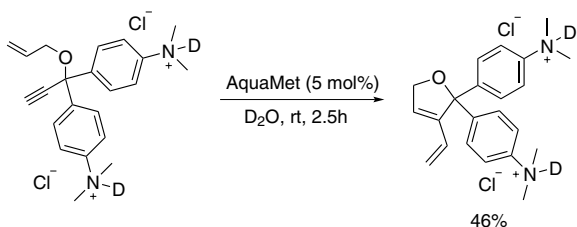
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Tech. Note (1)
Ref. (1)



Tech. Note (1)
Ref. (1)

References:

1. *Catal. Sci. Technol.*, **2012**, 22, 2424.
2. *ACS Catal.*, **2014**, 4, 3227.

44-0765 [1,3-Bis(2,4,6-trimethylphenyl)-4-[(trimethylammonio)methyl]imidazolidin-2-ylidene]-(2-i-propoxybenzylidene)dichlororuthenium(II) chloride StickyCat Cl [1452227-72-3] 100mg
500mg
C₃₅H₄₈Cl₂N₃ORu; FW: 734.20; green powder.
Note: U.S. Patent 61/603,790, PCT/EP2013/053967.

Technical Note:

1. This is an easily removable olefin metathesis catalyst. It shows high activity at 40-110°C. Residual ruthenium metal is usually below 5 ppm.



Tech. Note (1)
Ref. (1)

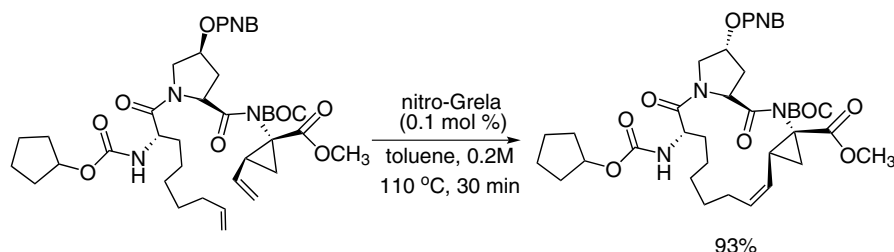
Reference:

1. *Green Chem.*, **2012**, 14, 3264.

44-0758 [1,3-Bis(2,4,6-trimethylphenylimidazolidin-2-ylidene)]-(2-i-propoxy-5-nitrobenzylidene) ruthenium(II) dichloride nitro-Grela [502964-52-5] 100mg
500mg
C₃₁H₃₇Cl₂N₃O₃Ru; FW: 671.62; green powder.
Note: U.S. Patent 6,867,303, PCT/EP2003/01112.

Technical Note:

1. Catalyst used for an efficient synthesis of HCV Protease Inhibitor, BILN 2061.
2. The nitro-Grela catalyst is a stable olefin metathesis initiator active in various ring-closing, cross, and enyne metathesis reactions. Its efficiency has been proven in numerous total syntheses of natural and biologically active compounds, and in material science. (see Ref. 1-9)



Tech. Note (1)
Ref. (1,2)

References:

1. *Org. Lett.*, **2008**, 1, 1303.
2. *Org. Process Res. Dev.*, **2009**, 13, 250.
3. *Org. Lett.*, **2010**, 12, 248.
4. *Chem. Eur. J.*, **2013**, 19, 11847.
5. *Org. Lett.*, **2010**, 12, 248.
6. *Angew. Chem. Int. Ed.*, **2008**, 47, 6483.
7. *Tetrahedron Lett.*, **2006**, 47, 6351.
8. *J. Am. Chem. Soc.*, **2004**, 126, 9318.
9. *Angew. Chem. Int. Ed.*, **2002**, 41, 4038.

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44-0753 [1,3-Bis(2,4,6-trimethylphenylimidazolidin-2-ylidene)(tricyclohexylphosphine)-(2-oxobenzylidene)] ruthenium(II) chloride LatMet [1407229-58-6]

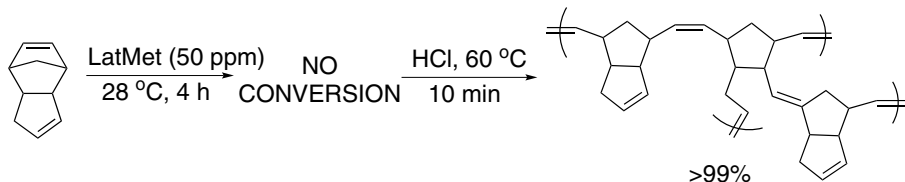
C₄₆H₆₅ClN₂OPRu; FW: 829.52; green powdr.

Note: U.S. Patent 9,328,132, PCT/EP2013/065839.

100mg
500mg

Technical Note:

1. This catalyst is used for olefin metathesis polymerization.



Tech. Note (1)
Ref. (1)

References:

1. *Chem. Eur. J.*, **2014**, 20, 1.
2. *Eur. J. Inorg. Chem.*, **2014**, 1131.

44-0760 Dichloro(1,3-bis(2,4,6-trimethylphenyl)imidazolidin-2-ylidene){2-[(ethoxy-2-oxoethylidene)amino]benzylidene}ruthenium(II) HeatMet

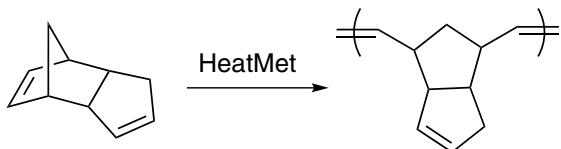
C₃₂H₃₇Cl₂N₃O₂Ru; FW: 667.63; dark purple xtls.

Note: U.S. Patent 14/443,034.

100mg
500mg

Technical Note:

1. HeatMet catalyst is a highly efficient latent catalyst, requiring thermal activation to initiate catalytic activity. Its characteristics are especially suitable to mold polymerization of reactive monomers such as dicyclopentadiene (DCPD). The catalyst is soluble in toluene and dichloromethane.



Tech. Note (1)
Ref. (1)

References:

1. *ChemSus Chem.*, **2015**, 8, 4139.

07-2203 1,4-Bis(2-isocyanopropyl)piperazine (SnatchCat Metal Scavenger) [51641-96-4]

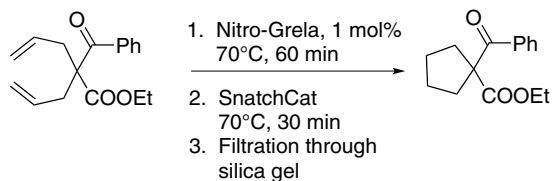
C₁₂H₂₀N₄; FW:220.31; white xtl.

Note: U.S. Patent 14/443,048

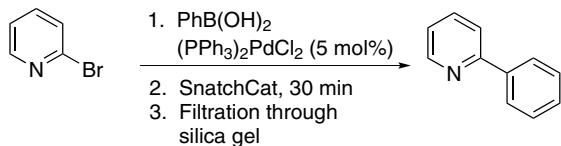
1g
5g

Technical Note:

1. SnatchCat represents a universal tool for metal removal with a proven efficiency for Ru and Pd metals. The product is an immediate metathesis reaction quencher, allowing reduced metal content to 10ppm after 20 min scavenging time and a simple workup by silica gel filtration. Compatible with a broad range of functional groups and solvents, the product is stable, nontoxic, non-volatile and odor-free.



Tech. Note (1)
Ref. (1)



References:

1. *ChemSus Chem.*, **2015**, 8, 4139.

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