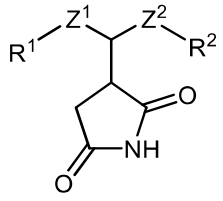
continue to deliver a higher level of performance for consumers, there is a continued need to provide more advanced, reliable e-fluids in the industry. Some of the most important additives used in the market are those that improve the properties in electric transmission fluid, electric thermal fluid, and electric grease.

[008] In addition to lubricity and corrosion, properties of additives, fluids, and fuels that can affect the vehicle performance can include, but are not limited to, electrical conductivity, dielectric breakdown voltage, and oxidative degradation. Electrical conductivity is one of the key parameters to determine the suitability of lubricant used as electric drive fluid (EDF). Lubricants used in an eMotor are designed to deliver appropriate low conductivity to prevent charge build-up and prevent arcing and cause hardware damage. External factors such as temperature, time and moisture content can alter fluid conductivity. Polar components arising from oxidation will also increase the ability of the lubricant to carry charge. For optimal performance, EDF is expected to deliver low and stable electrical conductivity over the operational life of the lubricant. Dielectric breakdown voltage is a measure of the resistance of an insulator to break down under an applied electric field. This breakdown of the insulation often results in arcing which can lead to hardware failure in high voltage applications. Oxidative degradation of fuels and oils results in insoluble and soluble materials that are the precursors of engine deposit and lacquers often observed in high temperature applications.

[009] With the advent of higher performing traditional and electric vehicles, the demand for chemical additives has steadily increased in recent years. The reported synthetic methods to make succinimide derivatives, such as hexadecenyl (C16 alkenyl) succinimide, have been either non-economical and/or generate too much waste to become a commercially relevant manufacturing process for the larger volumes required in manufacture of products, such as lubricants, fluid additives, and fuel additives. Accordingly, there remains a need for improved processes and intermediates for use in the preparation of succinimide derivatives.

SUMMARY

[009a] In an aspect, there is provided a compound of the formula I



I

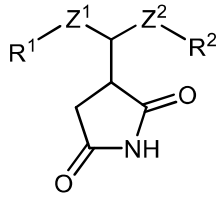
wherein

Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

R^1 is H or C_1-C_6 alkyl; and

R^2 is C_6-C_{36} alkyl

[009b] In another aspect, there is provided a composition comprising of a compound of the formula I



I

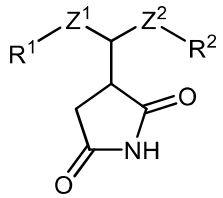
wherein

Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

R^1 is H or C_1-C_6 alkyl; and

R^2 is C_6-C_{36} alkyl.

[009c] In another aspect, there is provided a process for preparing a compound of the formula I



I

wherein

Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

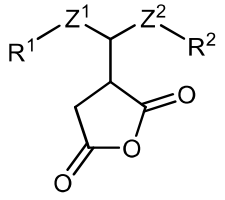
R^1 is H or C_1-C_6 alkyl; and

R^2 is C_6-C_{36} alkyl,

comprising one or more of steps

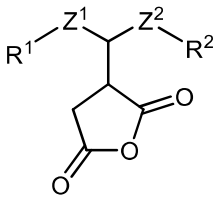
i. contacting a terminal C_{10}-C_{44} alkyl olefin with a catalyst under conditions suitable to isomerize the terminal C_{10}-C_{44} alkyl olefin to one or more of a beta-gamma C_{10}-C_{44} alkyl olefin, gamma-delta C_{10}-C_{44} alkyl olefin, delta-epsilon C_{10}-C_{44} alkyl olefin, epsilon-zeta C_{10}-C_{44} alkyl olefin, or zeta-eta C_{10}-C_{44} alkyl olefin; or

ii. contacting the beta-gamma C_{10}-C_{44} alkyl olefin, gamma-delta C_{10}-C_{44} alkyl olefin, delta-epsilon C_{10}-C_{44} alkyl olefin, epsilon-zeta C_{10}-C_{44} alkyl olefin, or zeta-eta C_{10}-C_{44} alkyl olefin product of step (i) with maleic anhydride under conditions suitable to provide a compound of the formula II



(II); or

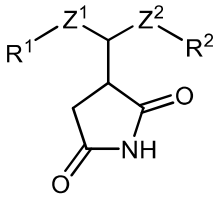
iii. contacting a compound of the formula II



II

with an ammonia source under conditions sufficient to provide a compound of the formula I.

[009d] In another aspect, there is provided a process for preparing a compound of the formula I



I

wherein

Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

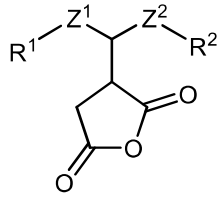
R^1 is H or C_1-C_6 alkyl; and

R^2 is C_6-C_{36} alkyl,

comprising

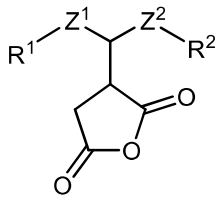
i. contacting a terminal C_{10}-C_{44} alkyl olefin with catalyst under conditions suitable to isomerize the terminal C_{10}-C_{44} alkyl olefin to one or more of a beta-gamma C_{10}-C_{44} alkyl olefin, gamma-delta C_{10}-C_{44} alkyl olefin, delta-epsilon C_{10}-C_{44} alkyl olefin, epsilon-zeta C_{10}-C_{44} alkyl olefin, or zeta-eta C_{10}-C_{44} alkyl olefin; and

ii. contacting the beta-gamma C_{10}-C_{44} alkyl olefin, gamma-delta C_{10}-C_{44} alkyl olefin, delta-epsilon C_{10}-C_{44} alkyl olefin, epsilon-zeta C_{10}-C_{44} alkyl olefin, or zeta-eta C_{10}-C_{44} alkyl olefin product of step (i) with maleic anhydride under conditions suitable to provide a compound of the formula II



(II); and

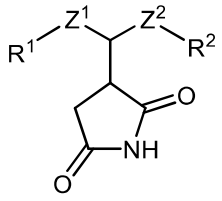
iii. contacting a compound of the formula II



II

with an ammonia source under conditions sufficient to provide a compound of the formula I.

[009e] In another aspect, there is provided a compound of the formula I



I

wherein

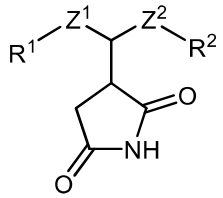
Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

R^1 is H or C_1-C_6 alkyl; and

R^2 is C_6-C_{36} alkyl,

wherein the compound of the formula I is prepared by a process as defined above.

[009f] In another aspect, there is provided a composition comprising at least one compound of the formula I



I

wherein

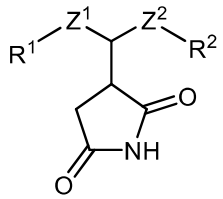
Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

R^1 is H or C_1-C_6 alkyl; and

R^2 is C_6-C_{36} alkyl,

wherein the compound of the formula I is prepared by a process as defined above.

[010] In one example, the present disclosure provides a compound of the formula I



I

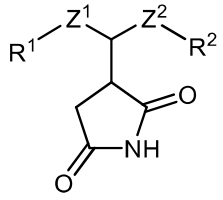
[011] wherein

[012] Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

[013] R^1 is H or C_1-C_6 alkyl; and

[014] R^2 is C_7-C_{36} alkyl.

[015] In another example, the present disclosure provides a composition comprising of a compound of the formula I



I

[016] wherein

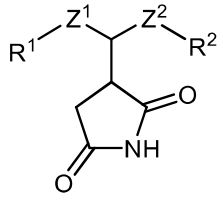
[017] Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

[018] R^1 is H or C_1-C_6 alkyl; and

[019] R^2 is C_7-C_{36} alkyl.

[020] It has been shown herein that the compounds and compositions described herein provide both very good lubricity properties and corrosion resistance.

[021] In another example, the present disclosure provides a process for preparing a compound of the formula I



I

[022] wherein

[023] Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

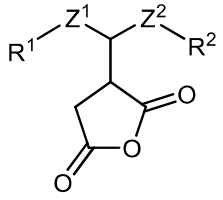
[024] R^1 is H or C_1-C_6 alkyl; and

[025] R^2 is C_7-C_{36} alkyl,

[026] comprising one or more of steps

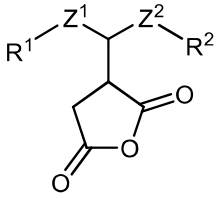
[027] i. contacting a terminal C_{10}-C_{44} alkyl olefin with a catalyst under conditions suitable to isomerize the terminal C_{10}-C_{44} alkyl olefin to one or more of a beta-gamma C_{10}-C_{44} alkyl olefin, gamma-delta C_{10}-C_{44} alkyl olefin, delta-epsilon C_{10}-C_{44} alkyl olefin, epsilon-zeta C_{10}-C_{44} alkyl olefin, zeta-eta C_{10}-C_{44} alkyl olefin, or eta-theta C_{10}-C_{44} alkyl olefin; or

[028] ii. contacting the beta-gamma C_{10}-C_{44} alkyl olefin, gamma-delta C_{10}-C_{44} alkyl olefin, delta-epsilon C_{10}-C_{44} alkyl olefin, epsilon-zeta C_{10}-C_{44} alkyl olefin, or zeta-eta C_{10}-C_{44} alkyl olefin product of step (i) with maleic anhydride under conditions suitable to provide a compound of the formula II



(II); or

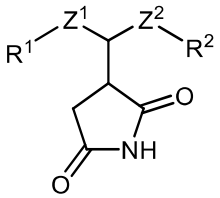
[029] iii. contacting a compound of the formula II



II

[030] with an ammonia source under conditions sufficient to provide a compound of the formula I.

[031] In another example, the present disclosure provides a process for preparing a compound of the formula I



I

[032] wherein

[033] Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

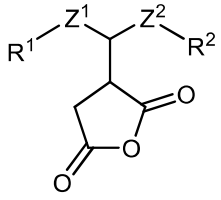
[034] R^1 is H or C_1-C_6 alkyl; and

[035] R^2 is C_7-C_{36} alkyl,

[036] comprising

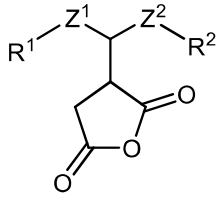
[037] i. contacting a terminal C_{10}-C_{44} alkyl olefin with catalyst under conditions suitable to isomerize the terminal C_{10}-C_{44} alkyl olefin to one or more of a beta-gamma C_{10}-C_{44} alkyl olefin, gamma-delta C_{10}-C_{44} alkyl olefin, delta-epsilon C_{10}-C_{44} alkyl olefin, epsilon-zeta C_{10}-C_{44} alkyl olefin, zeta-eta C_{10}-C_{44} alkyl olefin, or eta-theta C_{10}-C_{44} alkyl olefin; and

[038] ii. contacting the beta-gamma C_{10}-C_{44} alkyl olefin, gamma-delta C_{10}-C_{44} alkyl olefin, delta-epsilon C_{10}-C_{44} alkyl olefin, epsilon-zeta C_{10}-C_{44} alkyl olefin, or zeta-eta C_{10}-C_{44} alkyl olefin product of step (i) with maleic anhydride under conditions suitable to provide a compound of the formula II



(II); and

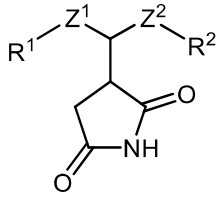
[039] iii. contacting a compound of the formula II



II

[040] with an ammonia source under conditions sufficient to provide a compound of the formula I.

[041] In another example, the present disclosure provides a compound of the formula I



I

[042] wherein

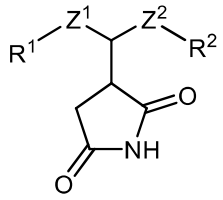
[043] Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

[044] R^1 is H or C_1-C_6 alkyl; and

[045] R^2 is C_6-C_{36} alkyl,

[046] wherein the compound of the formula I is prepared by according to a process as described herein.

[047] In another example, the present disclosure provides a composition comprising at least one compound of the formula I



I

[048] wherein

[049] Z^1 and Z^2 are each independently a bond or -CH=CH- , provided that one of Z^1 or Z^2 is -CH=CH-, and one of Z^1 or Z^2 is a bond;

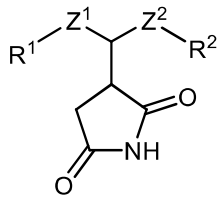
[050] R^1 is H or C_1-C_6 alkyl; and

[051] R^2 is C_6-C_{36} alkyl,

[052] wherein the compound of the formula I is prepared by according to a process as described herein.

[053] Additional eexamples, features, and advantages of the disclosure will be apparent from the following detailed description and through practice of the disclosure. The compounds and methods of the present disclosure can be described as examples in any of the following enumerated clauses. It will be understood that any of the examples described herein can be used in connection with any other examples described herein to the extent that the examples do not contradict one another.

[054] 1. A compound of the formula I



I

[055] wherein