Claims

1. A method of reducing vanadium corrosion in a gas turbine comprising:

adding an oleophilic corrosion inhibitor into a combustion fuel, in which the oleophilic corrosion inhibitor comprises magnesium chemically bonded to carbon black support particles;

allowing the combustion fuel to combust in the gas turbine; and

reducing vanadium corrosion in the gas turbine.

2. The method of claim 1, further comprising mixing the oleophilic corrosion inhibitor and the combustion fuel.

3. The method of claim 1, further comprising mixing the oleophilic corrosion inhibitor with liquid fuel solvent.

4. The method of claim 1, in which:

the magnesium comprises magnesium oxide; and

the oleophilic corrosion inhibitor is added in an amount such that an amount of magnesium oxide is greater than an amount of vanadium in the gas turbine.

5. The method of claim 1, in which the combustion fuel comprises liquid oil.

6. The method of claim 1, in which the magnesium comprises at least one of magnesium oxide and elemental magnesium.

7. The method of claim 1, in which the magnesium comprises from 0.05 to 20 weight percent magnesium oxide.

8. The method of claim 1, in which the carbon black support particles comprise acetylene black.

9. The method of claim 1, in which the carbon black support particles comprise a particle size of less than 20 nm.

10. The method of claim 1, in which the carbon black support particles comprise an ash content of less than 0.5 weight percent.

11. The method of claim 1, in which the carbon black support particles comprise a surface area of from 50 m^2/grams to 100 m^2/gram.

12. The method of claim 1, in which the magnesium is attached to the carbon black support particles.

13. The method of claim 1, in which the carbon black support particles comprise:
a particle size of less than 40 nm;
an oxygen content of less than 1 weight percent; and
a surface area of at least 50 m^2/gram.