What is claimed is:

1. A system for dissolving ammonia gas in DI-water, the system comprising:

a deionized water source;

a gas mixing device comprising:

a first inlet in fluid communication with a first gas source that supplies ammonia gas;

a second inlet in fluid communication with a second gas source that supplies a transfer gas; and

a mixed gas outlet that outputs a gas mixture comprising the ammonia gas and the transfer gas;

a contactor in fluid communication with the deionized water source and the mixed gas outlet via at least one inlet of the contactor, the contactor generating deionized water having ammonia gas dissolved therein;

a sensor in fluid communication with the at least one inlet of the contactor for measuring a flow rate of the deionized water; and

a controller in communication with the sensor to:

adjust a pressure of the transfer gas output from the second gas source based on the flow rate of the deionized water measured by the sensor; and

set a flow rate of the ammonia gas supplied from the first gas source based on:

i) the flow rate of the deionized water measured by the sensor, and

ii) a predetermined conductivity set point.

2. The system of claim 1 wherein the mixed gas outlet is in fluid communication with the deionized water source upstream of the at least one inlet of the contactor.

3. The system of claim 2 further comprising a static mixing device positioned upstream of the at least one inlet of the contactor, the static mixing device for mixing the gas mixture output from the gas mixing device with deionized water output from the deionized water source.

4. The system of claim 1 wherein the contactor is a packed column or packed tower type contactor.

5. The system of claim 1 wherein the at least one outlet of the contactor comprises:

a gas outlet for expelling an off gas from the contactor; and

a liquid outlet for outputting the deionized water having ammonia gas dissolved therein.

6. The system of claim 1 further comprising a fluid level sensor in fluid communication with the top and the bottom of the contactor.

7. The system of claim 1 further comprising a pressure sensor in fluid communication with the contactor.

8. The system of claim 1 further comprising a temperature sensor in fluid communication with one of:

the at least one inlet of the contactor for measuring a temperature of the deionized water; and

at least one outlet of the contactor for measuring a temperature of the deionized water having ammonia gas dissolved therein.

9. The system of claim 8 wherein the controller is in communication with the temperature sensor, the controller further configured to set the flow rate of the ammonia gas supplied from the first gas source based on a temperature measured by the temperature sensor.

10. The system of claim 1 wherein the gas mixing device further comprises at least one flow control device in fluid communication with the first inlet of the gas mixing device.

11. The system of claim 10 wherein the gas mixing device further comprises a gas injector in communication with the second inlet, the gas injector being positioned within the gas mixing device to direct a flow of the transfer gas to an opening of an outlet of the at least one flow control device of the gas mixing device.

12. The system of claim 1 further comprising a pump in fluid communication with the at least one liquid outlet of the contactor.

13. The system of claim 1 wherein the mixed gas outlet is in fluid communication with the deionized water source.

14. The system of claim 1 wherein the at least one inlet of the contactor comprises:

a liquid inlet in fluid communication with the deionized water source; and

a gas inlet in fluid communication with the mixed gas outlet.

15. The system of claim 14 wherein the gas inlet comprises an exit orifice within the contactor that is positioned substantially at a mean level of a liquid in the contactor.

16. A method for dissolving ammonia gas in deionized water, the method comprising:

supplying ammonia gas to a first inlet of a gas mixing device;

supplying a transfer gas to a second inlet of the gas mixing device;

supplying a gas mixture comprising the ammonia gas and the transfer gas from the gas mixing device and deionized water to a contactor;

measuring a flow rate of the deionized water;

setting a flow rate of the ammonia gas based on:

i) the flow rate of the deionized water, and

ii) a predetermined conductivity set point;

flowing the deionized water having ammonia gas dissolved therein from the contactor; and

adjusting a pressure of the transfer gas based on the flow rate of the deionized water.

17. The method of claim 16 further comprising mixing the gas mixture output from the gas mixing device with the deionized water upstream of the contactor.

18. The method of claim 16 wherein the contactor is a packed column or packed tower type contactor.

19. The method of claim 16 further comprising:

expelling an off gas from a gas outlet of the contactor; and

flowing the deionized water having ammonia gas dissolved therein from a liquid outlet of the contactor.

20. The method of claim 16 further comprising sensing a fluid level of fluid in the contactor.

21. The method of claim 16 further comprising sensing a fluid pressure of fluid in the contactor.

22. The method of claim 16 further comprising sensing a temperature of at least one of: (i) the deionized water, and (ii) the deionized water having ammonia gas dissolved therein.

23. The method of claim 22 further comprising setting the flow rate of the ammonia gas to supply further based on the temperature.

24. The method of claim 16 further comprising controlling a flow rate of the ammonia gas supplied to the gas mixing device with at least one flow control device.

25. The method of claim 24 wherein supplying the transfer gas further comprises directing a flow of the transfer gas within the gas mixing device to an opening of an outlet of the at least one flow control device of the gas mixing device.

26. The method of claim 16 wherein flowing further comprises pumping the deionized water having ammonia gas dissolved therein from the contactor via a liquid outlet of the contactor.

27. The method of claim 16 wherein supplying the gas mixture to the contactor further comprises supplying the gas mixture to a gas inlet of the contactor, wherein the gas inlet comprises an exit orifice within the contactor that is positioned substantially at a mean level of a liquid in the contactor.