ness of from about 0.1 microns to about 10 microns, and an average spacing of from about 1 micron to about 100 microns.

14. The field emitter of claim **12** wherein the field emitter has a porous structure with an average pore wall thickness of from about 10 nm to about 1,000 nm, and an average pore size of from about 10 nm to about 1,000 nm.

15. The field emitter of claim **12** wherein the emitter achieves an emission current density greater than 1 A/cm^2 at an applied macroscopic electric field of 3 V/μm.

16. The field emitter of claim **12** wherein the emitter achieves an emission current density greater than 6 A/cm^2 at an applied macroscopic electric field of 7.5 V/μm.

17. The field emitter of claim **12** wherein the emitter achieves an emission current density of up to 11 A/cm^2 at an applied macroscopic electric field of 9.0 V/μm, without failure.

18. A cold cathode silicon carbide field emitter defining an emission face having a plurality of discrete emission projections, the field emitter achieving an emission current density greater than 6 A/cm^2 at an applied macroscopic electric field of 7.5 V/μm.

19. The field emitter of claim **18** wherein the field emitter is monolithic and homogenous in a direction transverse to the emission face of the field emitter.

20. The field emitter of claim **18** wherein the field emitter is nanoporous along the emission face.

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