CLAIMS

1. An abrasive article comprising:

a substrate;

abrasive particles coupled to the substrate by a bond material; and

a coating overlying at least a portion of the least one bond material, wherein the coating comprises a fluorinated poly(p-xylylene) polymer, and

wherein the substrate comprises a wire.

2. The abrasive article of claim 1, wherein the abrasive particles are arranged in a single layer overlying the substrate.

3. The abrasive article of claim 1, wherein the abrasive particles have an average particle size (D50) greater than an average thickness of the bond material.

4. The abrasive article of claims 1, 2, or 3, wherein the bond material comprises a plurality of layers, including a first layer and a second layer overlying the first layer.

5. The abrasive article of claims 1, 2, or 3, wherein the substrate comprises a material selected from the group consisting of a metal, a metal alloy, or a polymer, ~~woven material, non-woven material, a fibrous material, paper, or any combination thereof~~.

6. The abrasive article of claims 1, 2, or 3, wherein the bond material comprises a material selected from an organic material, an inorganic material, or a combination thereof.

7. The abrasive article of claim 6, wherein the bond material comprises a material including a metal, a metal alloy, a ceramic, a cermet, a glass, a composite, or any combination thereof.

8. The abrasive article of claim 6, wherein the bond material comprises a material including a polyester, an epoxy resin, a polyurethane, a polyamide, a polyacrylate, a polymethacrylate, a polyvinyl chloride, a polyethylene, a polysiloxane, a silicone, a cellulose acetate, a nitrocellulose, a natural rubber, starch, or any combination thereof.

9. The abrasive article of claims 1, 2, or 3, wherein the coating comprises parylene HT.

10. The abrasive article of claim 9, wherein the coating consists essentially of parylene HT.

11. The abrasive article of claims 1, 2, or 3, wherein the coating comprises an average thickness of at least 0.5 microns and not greater than 25 microns.

12. The abrasive article of claims 1, 2, or 3, wherein the abrasive particles comprise a material selected from the group of oxides, carbides, nitrides, borides, oxynitrides, oxyborides, diamond, or any combination thereof.

13. The abrasive article of claims 1, 2, or 3, wherein the substrate comprises a first surface, a second surface, and a side surface extending between the first surface and second surface, and wherein the first surface is a planar surface and the abrasive particles are coupled to the first surface by the bond material.

14. A method of forming an abrasive article, comprising:

providing a substrate having abrasive particles coupled to a surface of the substrate by a bod material, wherein the substrate comprises a wire;

applying a coating by vapor deposition, wherein the coating overlies the bond material and abrasive particles, wherein the coating comprises a fluorinated poly(p-xylylene) polymer.

15. The method of claim 14, wherein the fluorinated poly(p-xylylene) polymer includes parylene HT.