CLAIMS

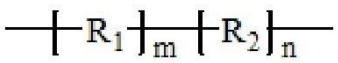
1. A spin-on carbon hardmask composition comprising a polymer having a structure represented by Formula 1 shown below and having a weight average molecular weight in a range of 1,500 to 10,000, the composition exhibiting a small evaporation loss when baked at a temperature of 400°C for 1 minute,

wherein the spin-on carbon hardmask composition comprises the polymer represented by Formula 1 in an amount of 1% to 50% by weight, a surfactant in an amount of 0.01% to 0.1% by weight, and an organic solvent in an amount of 50% to 98.99% by weight, respectively based on the total weight of the composition,

the evaporation loss is in a range of 2.5% to 3.5%, and

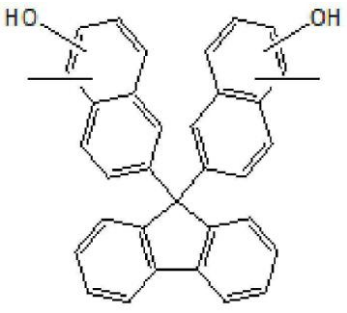
the coating thickness of a hardmask film is in a range of 135 nm to 2,200 nm,

[Formula 1]



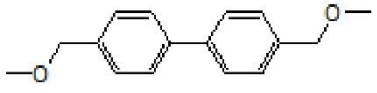
wherein in Formula 1, m and n are in ranges of $1 \leq m \leq 50$ and $1 \leq n \leq 50$, respectively,

R_1 is

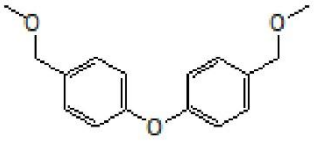
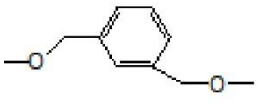


and

R_2 comprises any one of



,

, and .

2. The spin-on carbon hardmask composition of claim 1, wherein the evaporation loss is in a range of 2.7% to 3.2%.

3. The spin-on carbon hardmask composition of claim 2, wherein the evaporation loss is in a range of 2.9% to 3.1%.

4. The spin-on carbon hardmask composition of claim 1, wherein the surfactant is one or a mixture of two or more selected from the group consisting of polyoxyethylenealkylether, polyoxyethylenealkylphenylether, polyoxyethylenenonylphenylether, polyoxyethylene octylphenylether, polyoxyethylenepolyoxypropylene, polyoxyethylenelaurylether, and polyoxyethylenesorbitan.

5. The spin-on carbon hardmask composition of claim 1, wherein the organic solvent is one or a mixture of two or more selected from the group consisting of propyleneglycolomonomethylether (PGME), propyleneglycolomonomethylether acetate (PGMEA), cyclohexanone, cyclopentanone, γ-butyrolactone, ethyllactate (EL), methylethylketone, n-butylacetate, N-methylpyrrolidone (NMP), methyl 3-methoxypropionate (MMP), and ethyl 3-ethoxypropionate (EEP).

6. The spin-on carbon hardmask composition of claim 1, wherein the weight average molecular weight of the polymer is in a range of 1,500 to 15,000.

7. The spin-on carbon hardmask composition of claim 6, wherein the weight average molecular weight of the polymer is in a range of 1,500 to 10,000.

8. A method of forming a film of any one of claims 1 to 7 to a surface of a layer to be etched, through spin coating; and baking the composition to form a hardmask layer.