What is claimed is:

1. An encapsulation barrier stack, capable of encapsulating a moisture and/or oxygen sensitive article and comprising a multilayer film, wherein the multilayer film comprises:

- one or more barrier layer(s) having low moisture and/or oxygen permeability, and
- one or more sealing layer(s) arranged to be in contact with a surface of the at least one barrier layer, thereby covering and/ or plugging defects present in the barrier layer,

wherein the one or more sealing layer(s) comprise(s) a plurality of dendrimer encapsulated nanoparticles, the nanoparticles being reactive in that they are capable of interacting with moisture and/or oxygen to retard the permeation of moisture and/or oxygen.

2. An encapsulation barrier stack according to claim 1 wherein the dendrimer encapsulated nanoparticle are nanoparticles which are either encapsulated by dendrimeric molecule or surrounded by dendrimer or the nanoparticle is a dendrimer core after attachment of dendrons on its surface.

3. The encapsulation barrier stack according to claim 1 or 2 wherein the dendrimer encapsulated nanoparticles are crosslinked.

4. The encapsulation barrier stack of any of claims 1 to 3, wherein the one or more sealing layer(s) at least essentially consist(s) of the dendrimer encapsulated reactive nanoparticles.

5. The encapsulation barrier stack according to any of claims 1 to 4, wherein the nanoparticles are encapsulated by a encapsulating material which comprises or consists of dendrimer or dendron.

6. The encapsulation barrier stack of any of claims 1 to 5, wherein the encapsulating material further comprises one or more of the following: an organic polymer, inorganic polymer, a water soluble polymer, organic solvent soluble polymer,

biological polymer, synthetic polymer, oligomer, surfactant, organic compounds or crosslinker compounds.

7. The encapsulation barrier stack of any of claims 1 to 6, wherein the encapsulating material comprises, prior to the encapsulation, cross-linked or cross-linkable compounds, a UV curable group, electron beam curable or heat curable material.

8. The encapsulation barrier stack of any one of the foregoing claims, wherein one of the one or more sealing layers conforms substantially to the shape of the defects present on the surface of one of the one or more barrier layers.

9. The encapsulation barrier stack of claim 8, wherein the sealing layer is formed by conformal deposition.

10. The barrier stack of any one of the preceding claims, wherein the nanoparticles are capable of interacting with moisture and/or oxygen through chemical reaction.

11. The barrier stack of any one of the preceding claims, wherein the nanoparticles comprise a material selected from the group consisting of a metal, a metal oxide and a combination thereof.

12. The barrier stack of any one of the preceding claims, further comprising a substrate for supporting the multilayer film.

13. The barrier stack of claim 12, wherein the substrate comprises a material selected from polyacetate, polypropylene, polyimide, cellophane, poly(1-trimethylsilyl-1-propyne, poly(4-methyl-2-pentyne), polyimide, polycarbonate, polyethylene, polyethersulfone, epoxy resins, polyethylene terepthalate, polystyrene, polyurethane, polyacrylate, and polydimethylphenylene oxide, styrene-divinylbenzene copolymers, polyvinylidene fluoride (PVDF), nylon, nitrocellulose, cellulose, glass, indium tin oxide, nano-clays, silicones, polydimethylsiloxanes, biscyclopentadienyl iron, and polyphosphazenes.

14. An electronic module comprising an electronic device that is sensitive to moisture and/or oxygen, said electronic device being arranged within an encapsulation barrier stack according to any one of claims 1 to 13.

15. The electronic module of claim 14, wherein the electronic device is selected from the group consisting of an Organic Light Emitting Device (OLED), a charged-coupled device (CCD), a Liquid Crystal Display (LCD), a solar cell, a thin-film battery, an Organic Thin Film Transistor (OTFT), an organic Integrated Circuit (IC), an organic sensor, and a micro-electro-mechanical sensor (MEMS).

16. A method of manufacturing an encapsulation barrier stack according to any one of claims 1 to 13, the method comprising:

- providing one or more barrier layer(s), and
- forming one or more sealing layer(s), wherein forming the one or more sealing layer(s) comprises
    - (i) mixing an encapsulation material consisting of or comprising of dendrimers or precursors thereof, dendrons or precursors thereof, optionally in the presence of a polymerizable compound and/or a cross-linkable compound, with a plurality of nanoparticles, the nanoparticles being reactive in that they are capable of interacting with moisture and/or oxygen, thereby forming a sealing mixture,

    (ii) applying the sealing mixture onto the barrier layer under conditions that allow the nanoparticles to be encapsulated by or in the dendrimers, thereby forming the sealing layer.

17. The method of claim 16, wherein the dendrimers are dendrimers or hyper-branched polymers comprising one or more of the following: secondary amine (--NH--) or primary amine (-NH_2) groups, hydroxyl group (--OH), carboxylic acid (--COOH), -COONH2, -COCl, Cl, Br or I or F, thiols (SH), more preferably amine or hydroxyl group.

18. The method according to any one of claims 16 to 17, wherein the dendrimers are selected from poly(amidoamines) (PAMAM), polyethylene imines (PEI), poly(propyleneimines) (PPI), and polypropyleneimine dotriacontaamine dendrimers (DAB) and Frechet dendrimers.

19. The method of any one of claims 16 to 18, further comprising adding a surface modifying compound to the sealing mixture.

20. The method of claim 19, wherein the surface modifying compound is a silane.

21. Use of dendrimer encapsulated reactive nanoparticles as defined in any of the preceding claims for preparing a sealing layer of a barrier stack, wherein the nanoparticles are reactive in that they are capable of interacting with moisture and/or oxygen to retard the permeation of moisture and/or oxygen through the defects present in the barrier layer.

22. Use of an encapsulation barrier stack defined in any of the preceding claims 1-13 for encapsulating an electronic device, or for food packaging, pharmaceutical packaging or medical packaging.