CLAIMS

1. An electro-conductive embedding medium for a biological sample comprising:

- from 60% to 99% wt. of a glycol dimethacrylate selected from alkylene glycol dimethacrylate and/or oligo(alkylene glycol) dimethacrylate;
- a polyalkylene glycol diacrylate or of a polyalkylene glycol methacrylate; said polyalkylene glycol diacrylate or polyalkylene glycol methacrylate being optionally substituted by at least one hydrophilic group such as hydroxyl, amino, or an oxo group; and
- a radical polymerization initiator.

2. The electro-conductive embedding medium according to claim **1**, further comprising at least one additive; preferably comprising at least one heavy metal salt or lanthanide salt.

3. The electro-conductive embedding medium according to claim **1** or claim **2**, wherein the glycol dimethacrylate is selected from ethylene glycol dimethacrylate, diethylene glycol dimethacrylate, triethylene glycol dimethacrylate, propylene glycol dimethacrylate and butylene glycol dimethacrylate; preferably the glycol dimethacrylate is triethylene glycol dimethacrylate.

4. The electro-conductive embedding medium according to any one of claims **1** to **3**, wherein the polyalkylene glycol diacrylate is selected from polyethylene glycol diacrylate, polypropylene glycol diacrylate and polybutylene glycol diacrylate; preferably the polyalkylene glycol diacrylate is polypropylene glycol diacrylate.

5. The electro-conductive embedding medium according to any one of claims **1** to **3**, wherein the polyalkylene glycol methacrylate is selected from polyethylene glycol methacrylate, polypropylene glycol methacrylate and polybutylene glycol methacrylate; said polyalkylene glycol methacrylate being optionally substituted by at least one hydrophilic group such as hydroxyl, amino, or an oxo group; preferably the polyalkylene glycol methacrylate is hydroxyl polyethylene glycol methacrylate.

6. The electro-conductive embedding medium according to any one of claims **1, 3** and **4**, comprising:

- from 60% to 99% wt. of triethylene glycol dimethacrylate;
- from more than 0% to 38% wt. of polypropylene glycol diacrylate; and
- from 0.1% to 2% wt. of a radical polymerization initiator.

7. The electro-conductive embedding medium according to any one of claims **1, 3** and **5**, comprising:

- from 60% to 99% wt. of triethylene glycol dimethacrylate;
- from more than 0% to 38% wt. of hydroxyl polyethylene glycol methacrylate; and
- from 0.1% to 2% wt. of a radical polymerization initiator.

8. The electro-conductive embedding medium according to any one of claims **1, 3** and **4**, comprising:

- 79% wt. of triethylene glycol dimethacrylate;
- 20% wt. of polypropylene glycol diacrylate; and
- 1% wt. of benzoin methyl ether.

9. The electro-conductive embedding medium according to any one of claims **2** to **5**, wherein the at least one heavy metal salt, more preferably comprising osmium and/or uranyl acetate.

10. The electro-conductive embedding medium according to any one of claims **1** to **9**, further comprising at least one biological sample, preferably a vitrified and/or chemically fixed and/or dehydrated biological sample.

11. An electro-conductive imaging material comprising at least one biological sample embedded in a polymer matrix resulting from the polymerization of the embedding medium according to any one of claims **1** to **10**.

12. The electro-conductive material according to claim **11**, preserving the internal fluorescence, the protein activity and/or the antigenic specificity of the embedded biological sample.

13. A method for imaging by microscopy a biological sample comprising the following steps:

(i-1) fixing and/or dehydrating the biological sample;

(ii) infiltrating on the biological sample of step (i-1) an electro-conductive embedding medium according to any one of claims **1** to ~~**10**~~**9**;

(iii) polymerizing the mixture obtained at step (ii), resulting in an electro-conductive imaging material;

(iv) imaging by light microscopy and/or electron microscopy the electro-conductive imaging material of step (iii).

14. The method according to claim **13**, further comprising a step of microtomy or ultra-microtomy on the electro-conductive imaging material.

15. Use of an electro-conductive embedding medium according to any one of claims **1** to **10**, or of an electro-conductive imaging material according to claim **11** or claim **12**, for imaging a biological sample by microscopy, preferably by light and/or electron microscopy.

16. A kit for preparing a biological sample to be imaged in microscopy, comprising:
- a first container comprising (a) a glycol dimethacrylate selected from alkylene glycol dimethacrylate and/or oligo(alkylene glycol) dimethacrylate; and (b) a polyalkylene glycol diacrylate or a polyalkylene glycol methacrylate, said polyalkylene glycol diacrylate or polyalkylene glycol methacrylate being optionally substituted by at least one hydrophilic group such as hydroxyl, amino, or an oxo group;
- a second container comprising radical polymerization initiator;

or comprising:
a container comprising (a) an glycol dimethacrylate selected from alkylene glycol dimethacrylate and/or oligo(alkylene glycol) dimethacrylate; (b) a polyalkylene glycol diacrylate or a polyalkylene glycol methacrylate, said polyalkylene glycol diacrylate or polyalkylene glycol methacrylate being optionally substituted by at

least one hydrophilic group such as hydroxyl, amino, or an oxo group; and (c) a radical polymerization initiator;
and mixing means.