CLAIMS

1. A gold alloy composition comprising one or more metals selected from a group consisting of zirconium, Titanium and Magnesium for jewellery manufacture, the gold alloy composition comprising:
    - 75 to 99.5% by weight of Gold,
    - 0.01 to 1.5 % by weight of Zirconium, and/or
    - 0.01 to 1.5 % by weight of Magnesium, and/or
    - 0.01 to 1.5 % by weight of Titanium, and/or
    - 0 to 24.98% by weight of Copper,
    - 0 to 24.98% by weight of Zinc,
    - 0 to 24.98% by weight of Silver.

2. The Gold alloy composition as claimed in claim 1, wherein the gold alloy composition is an 18-carat Gold alloy comprising:
    - 75 to75.5% by weight of Gold,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0.01 to 1.5 % by weight of Titanium,
    - 0.01 to 1.5 % by weight of Zirconium,
    - 0 to 24.97% by weight of Copper,
    - 0 to 24.97% by weight of Zinc, and
    - 0 to 24.97% by weight of Silver.

3. The Gold alloy composition as claimed in claim 1, wherein the gold alloy composition is a 21-carat Gold alloy comprising:
    - 87.5 to 88% by weight of Gold,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0.01 to 1.5 % by weight of Titanium,
    - 0.01 to 1.5 % by weight of Zirconium,
    - 0 to 12.47 % by weight of Copper,
    - 0 to 12.47 % by weight of Zinc, and
    - 0 to 12.47 % by weight of Silver.

4. The Gold alloy composition as claimed in claim 1, wherein the gold alloy is a 22-carat Gold alloy composition comprising:
    - 91.6 to 92% by weight of Gold,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0.01 to 1.5 % by weight of Titanium,

- 0.01 to 1.5 % by weight of Zirconium
- 0 to 8.37% by weight of Copper,
- 0 to 8.37% by weight of Zinc, and
- 0 to 8.37% by weight of Silver.

5. The Gold alloy composition as claimed in claim 1, wherein the gold alloy is a 23-carat Gold alloy composition comprising:
    - 95.8 to 97% by weight of Gold,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0.01 to 1.5 % by weight of Titanium,
    - 0.01 to 1.5 % by weight of Zirconium
    - 0 to 4.17% by weight of Copper,
    - 0 to 4.17%by weight of Zinc, and
    - 0 to 4.17% by weight of Silver.

6. The Gold alloy composition as claimed in claim 1, wherein the gold alloy is a 24-carat Gold alloy composition comprising:
    - 97 to 99.5 % by weight of Gold,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0.01 to 1.5 % by weight of Titanium,
    - 0.01 to 1.5 % by weight of Zirconium.

7. The Gold alloy composition as claimed in anyone of the claims 1 to 6, wherein the gold alloy composition has a specific gravity in the range of 14 to 19.5 g/cc; preferably 14.67g/cc, 16.502g/cc, 17.057g/cc, 17.88 g/cc and 18.771 g/cc for 18, 21, 22, 23 and 24-carat gold alloy respectively; the hardness in the range or 75 to 260 Vickers HV-0.05 ASM F 384-11; preferably 240-260, 200-225, 170-195, 125-155 and 75-100 Vickers HV-0.05 ASM F 384-11 for 18, 21, 22, 23 and 24-carat gold alloy respectively..

8. The Gold alloy composition as claimed in claim 1, wherein the gold alloy composition is alloyed with at least two metals out of zirconium, Titanium and Magnesium for jewellery manufacture and comprises:
    - 75 to 99.5% by weight of Gold,
    - 0.01 to 1.5 % by weight of Zirconium, and/or
    - 0.01 to 1.5 % by weight of Magnesium, and/or
    - 0.01 to 1.5 % by weight of Titanium, and/or
    - 0 to 24.98% by weight of Copper,

- 0 to 24.98% by weight of Zinc,
- 0 to 24.98% by weight of Silver.

9. The Gold alloy composition as claimed in claim 10, wherein the gold alloy composition is a whitish yellow 18-carat Gold alloy comprising:
    - 75 to75.5% by weight of Gold,
    - 0.01 to 1.5 % by weight of Zirconium,
    - 0.01 to 1.5 % by weight of Titanium,
    - 0 to 24.98% by weight of Copper,
    - 0 to 24.98% by weight of Zinc, and
    - 0 to 24.98% by weight of Silver; Or

    wherein the gold alloy is a greenish yellow 18-carat Gold alloy comprising;
    - 75 to75.5% by weight of Gold,
    - 0.01 to 1.5 % by weight of Zirconium,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0 to 24.98% by weight of Copper,
    - 0 to 24.98% by weight of Zinc, and
    - 0 to 24.98% by weight of Silver; Or

    wherein the gold alloy is a pale yellow 18-carat Gold alloy comprising;
    - 75 to75.5% by weight of Gold,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0.01 to 1.5 % by weight of Titanium,
    - 0 to 24.98% by weight of Copper,
    - 0 to 24.98% by weight of Zinc, and
    - 0 to 24.98% by weight of Silver.

10. The Gold alloy composition as claimed in claim 9, wherein the gold alloy has a specific gravity in the range of 14 to 15 g/cc; preferably 14.78 g/cc, 14.75-g/cc and 14.74 g/cc for Zr-Ti, Zr-Mg and Ti-Mg of the 18-carat gold alloy respectively; . hardness in the range of 235 to 265 Vickers HV-0.05 ASM F 384-11; preferably 245-265, 235-255 and 245-255 Vickers HV-0.05 ASM F 384-11 for Zr-Ti, Zr-Mg and Ti-Mg of the 18-carat gold alloy respectively.

11. The Gold alloy composition as claimed in claim 8, wherein the gold alloy is a whitish yellow 21-carat Gold alloy comprising:
    - 87.5 to 88% by weight of Gold,

- 0.01 to 1.5 % by weight of Zirconium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 12.48 % by weight of Copper,
- 0 to 12.48 % by weight of Zinc, and
- 0 to 12.48 % by weight of Silver; or

wherein the gold alloy is a greenish yellow 21 carat Gold alloy comprising;

- 87.5 to 88% by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium,
- 0.01 to 1.5 % by weight of Magnesium,
- 0 to 12.48 % by weight of Copper,
- 0 to 12.48 % by weight of Zinc, and
- 0 to 12.48 % by weight of Silver or

wherein the gold alloy is a pale yellow 21 carat Gold alloy comprising;

- 87.5 to 88% by weight of Gold,
- 0.01 to 1.5 % by weight of Magnesium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 12.48 % by weight of Copper,
- 0 to 12.48 % by weight of Zinc, and
- 0 to 12.48 % by weight of Silver.

12. The Gold alloy composition as claimed in claim 11, wherein the gold alloy has a specific gravity in the range of 16 to 17 g/cc; preferably 16.69 g/cc, 16.55-g/cc, 16.51 g/cc for Zr-Ti, Zr-Mg and Ti-Mg of the 21-carat combinations respectively; hardness in the range or 200 to 230 Vickers HV-0.05 ASM F 384-11; preferably 205-230, 200-210 and 200-225 Vickers HV-0.05 ASM F 384-11 for Zr-Ti, Zr-Mg and Ti-Mg of the 21-carat gold alloy respectively.

13. The Gold alloy composition as claimed in claim 8 wherein the gold alloy is a whitish yellow 22-carat Gold alloy comprising:

- 91.6 to 92% by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 8.38% by weight of Copper,
- 0 to 8.38% by weight of Zinc, and
- 0 to 8.38% by weight of Silver, Or

wherein the gold alloy is a greenish yellow 22 carat Gold alloy comprising;

- 91.6 to 92% by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium,
- 0.01 to 1.5 % by weight of Magnesium,
- 0 to 8.38% by weight of Copper,
- 0 to 8.38% by weight of Zinc, and
- 0 to 8.38% by weight of Silver; Or

wherein the gold alloy is a pale yellow 22 carat Gold alloy comprising;

- 91.6 to 92% by weight of Gold,
- 0.01 to 1.5 % by weight of Magnesium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 8.38% by weight of Copper,
- 0 to 8.38% by weight of Zinc, and
- 0 to 8.38% by weight of Silver.

14. The Gold alloy composition as claimed in claim,13, wherein the gold alloy has a specific gravity in the range of 17 to 18 g/cc; preferably 17.40 g/cc, 17.14-g/cc and 17.08 g/cc for Zr-Ti, Zr-Mg and Ti-Mg of the 22-carat gold alloy respectively; hardness in the range of 170 to 205 Vickers HV-0.05 ASM F 384-11; preferably 175-190, 190- 205 and 170-195 Vickers HV-0.05 ASM F 384-11 for Zr-Ti, Zr-Mg and Ti-Mg of the 22-carat gold alloy respectively.

15. The Gold alloy composition as claimed in claim 8, wherein the gold alloy is a whitish yellow 23-carat Gold alloy comprising:

- 95.8 to 97% by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 4.18% by weight of Copper,
- 0 to 4.18%by weight of Zinc, and
- 0 to 4.18% by weight of Silver; Or

wherein the gold alloy is a greenish yellow 23-carat Gold alloy comprising:

- 95.8 to 97% by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium,
- 0.01 to 1.5 % by weight of Magnesium,
- 0 to 4.18% by weight of Copper,

- 0 to 4.18%by weight of Zinc, and
- 0 to 4.18% by weight of Silver; Or

wherein the gold alloy is a pale yellow 23-carat Gold alloy comprising:

- 95.8 to 97% by weight of Gold,
- 0.01 to 1.5 % by weight of Magnesium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 4.18% by weight of Copper,
- 0 to 4.18%by weight of Zinc, and
- 0 to 4.18% by weight of Silver

16. The Gold alloy composition as claimed in claim 15, wherein the gold alloy has a specific gravity in the range of 17.5 to 18.5 g/cc; preferably 18.27g/cc, 17.97-g/cc and 17.92 g/cc for Zr-Ti, Zr-Mg and Ti-Mg of the 23-carat gold alloy respectively; a hardness in the range of 125 to 155 Vickers HV-0.05 ASM F 384-11; preferably 145-155, 125- 135 and 135-150 Vickers HV-0.05 ASM F 384-11 for Zr-Ti, Zr-Mg and Ti-Mg of the 23-carat gold alloy respectively.

17.The Gold alloy as claimed in claim 8, wherein the gold alloy is a whitish yellow 24-carat Gold alloy comprising:

- 97 to 99.5 % by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium, and
- 0.01 to 1.5 % by weight of Titanium; Or

wherein the gold alloy is a greenish yellow 24-carat Gold alloy comprising:

- 97 to 99.5 % by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium, and
- 0.01 to 1.5 % by weight of Magnesium; Or

wherein the gold alloy is a pale yellow 24-carat Gold alloy comprising:

- 97 to 99.5 % by weight of Gold,
- 0.1 to 1.5 % by weight of Magnesium, and
- 0. 1 to 1.5 % by weight of Titanium.

18 The Gold alloy composition as claimed in claim 17, wherein the gold alloy has a specific gravity in the range of 18.5 to 19.5 g/cc; preferably 19.05g/cc, 18.73g/cc, 18.67g/cc for Zr-Ti, Zr-Mg and Ti-Mg of the 24-carat gold alloy respectively; a hardness in the range of 75 to 105 Vickers

HV-0.05 ASM F 384-11; preferably 75-105, 80-95 and 75-100 Vickers HV-0.05 ASM F 384-11 for Zr-Ti, Zr-Mg and Ti-Mg of the 24-carat gold alloy respectively.