CLAIMS

1. A method for verifying the authenticity of a product and optionally the identity of an author, including the following steps:

A. applying (210) to at least one surface of a product (100) a dispersion of transponders (110) or applying a label to the surface to which the dispersion of transponders (110) was previously applied;

B. characterizing (220) said surface of said product or label by moving at least one antenna (130) towards at least one portion of said product surface or label for scanning at least one subset of said transponders (110) acquiring a characterization information which include for each transponder (110) at least the transponder ID and the transponder position with respect to a predefined reference system;

C. storing (230) in a memory unit said characterization information acquired in step B, as a characterization information pattern of the product;

D. acquiring (240), by scanning at least one area of said at least one portion of said surface of product or label, wherein at least part of the dispersion of transponders (110) applied in step A is present, moving said at least one antenna (130) towards the surface of said product (100), the characterization information of step B, thus obtaining verification information;

E. storing (250) said verification information acquired in step D, relating to said product, in a authenticity verification pattern of the product;

F. searching (260) said authenticity verification pattern in said characterization

information pattern, within a predefined deviation margin; and

G. generating (280) digital information on the identity and authenticity of the product (100) and optionally on the identity of the author, as a function of a positive or negative outcome of step F.

2. A method according to claim 1, wherein said characterization information further comprises a received signal intensity indication (RSSI).

3. A method according to claim 1 or 2, wherein said characterization information comprises one or more of: an EPC (Electronic Product Code) memory, a TID (Tag Identification) memory, a user memory, a reading speed, a response time.

4. A method according to one or more of claims 1 to 3, wherein in step C and step E the characterization information pattern and the authenticity verification pattern of the product comprise for each transponder a distance indication of each transponder (110) from the other transponders, and the following steps are performed:

- dividing the set of transponders into all the subgroups consisting of M elements, with M greater than or equal to 2 and less than the total number of transponders on the surface of the product or the label;
- for every subgroup, calculating the average of the distances between the transponders in the subgroup;

- choosing the subgroups with a highest average distance above a predefined threshold, making sure that each of the detected transponders appears in at least M subgroups;
- storing the averages of the distances for each of the subgroups chosen in the previous step in said characterization information pattern in step C and in said authenticity verification pattern in step E.

5. A method according to one of claims 1 to 4, wherein said transponder position is calculated as an average of transponder positions detected in every antenna position for each transponder ID.

6. A method according to one of claims 1 to 5, wherein in step A the product (100) consists of a support on which a work of art is made.

7. A method according to one of claims 1 to 6, wherein in step A the dispersion of transponders is obtained by randomly mixing a plurality of the transponders (110) with a binding substance so that, following a drying step, the transponder position of said transponders is stable over time.

8. A method according to one of claims 1 to 7, wherein in steps B and D the RGBD information of color and depth of said product (100), as acquired when scanning by means of a camera for each scanned position of the product, is added to the characterization information and the verification information.

9. A method according to one of claims 1 to 8, wherein in step C the storing is carried out in a blockchain, by hashing at least one part of the characterization information obtained in step B, and then minting a non-fungible token (NFT) such as to contain in its metadata said hash and the reference to a storage location of said characterization information, preferably on a distributed file system (DFS) such as the InterPlanetary File System (IPFS).

10. A method according to one of claims 1 to 9, wherein in step C at least one part of the characterization information acquired in step B is compressed, encrypted and stored in a user memory of each of the transponders (110).

11. A method according to one of claims 1 to 10, wherein in step C a digitized biometric sample proving the identity of the author of the product (100) is stored, and is optionally stored in the blockchain according to claim 9 and/or in the user memory according to claim 10.

12. A method according to claim 11, wherein said digitized biometric sample proving the identity of the author of the product (100) comprises one of: at least one part of the digitized genetic code of said author of said product, a compressed and encrypted version thereof, the hash code of said at least one part of the digitized genetic code.

13. A method according to one of claims 1 to 12, wherein in steps B and D a plurality of antennas (AN1,AN2,AN3; ANT1,ANT2) is used, which have known mutual positions during the performing of the two steps, and wherein the mutual position of the transponders (110) is obtained by proximity to the antenna or trilateration based on the RSSI, the mutual positions being included in said characterization information and the verification information.

14. A method according to one of claims 1 to 13, wherein in step G at least one part of the characterization information obtained in step B is read from the user memory of the transponders (110) according to claim 10 and compared with at least one part of the verification information obtained in step D.

15. A system for univocal product characterization, comprising:

- a dispersion of transponders (110) applicable to a surface of a product (100) or a label applicable to the product;
- at least one RFID antenna (130);
- at least one processing unit;

characterized in that said processing unit is configured to receive and store said characterization information, acquired in step B, of said product (100) according to the method of one or more of claims 1 to 14, as well as to receive and verify the presence of the verification information, obtained in step D, with the same type of information within said characterization information.

16. A system according to claim 15, wherein a camera is included, which is configured to obtain an image of said product at a set of scanning positions on the surface of said product (100).

17. A system according to claim 15 or 16, wherein said processing unit is configured to calculate and store a hash of said at least one part of characterization information and to mint an NFT in a blockchain, such that it contains, within its metadata, said hash and a reference of a storage position of said characterization information, preferably on a distributed file system (DFS) such as the InterPlanetary File System (IPFS).

18. A system according to one or more of claims 15 to 17, wherein one or more systems for detecting the position of the antenna (130) are provided.