EPO has no authority to rule on infringement issues, the exclusive responsibility of courts at member states, the decision provides insight on how the issue would be solved at a national level. As an example, in a case related to nanoparticles used as reinforcement in composite materials and in line with the thoughts of the EPO, the District Court of Frankfurt/Main ruled that: "It could be left undecided whether the defendant was right and the amorphous silicon (SiO2) used was not known to the average expert at the priority date of the patent in question due to dimensions of its particles within the range of a few (hundred) nanometers. Even fillers unknown at the time of the patent application are within the scope of the patent in question".[109]

It may be concluded that, in this situation, materials containing previously unknown and unforeseeable characteristics will be probably considered as infringing the referred existing patents, even if such characteristics are considered new and inventive and allowed to be protected by a patent on improvements.

3. Higher degree of purity

In correlation with the higher control of the manufacturing processes, nano-technology allows the production of materials in a more precise way, in some cases by the production of devices and materials by the manipulation of individual atoms. This permits obtaining materials of higher purity, by controlling the exact composition of what is produced, to give origin to new inventions. While the new manufacturing process can easily fulfill the patentability requirements, the product obtained by that process, the purified material, might lack of novelty. Clarification is necessary to differentiate between cases in which a product with higher purity is in the market and instances where a product, due to description in the written prior art, is the same material with a different content of impurities.

The presence of impurities is usually considered an undesirable effect generated by a technical limitation in the manufacturing processes under use. One must distinguish among impurities and additions of small amount of elements that may indeed cause an effect on the product, like for example the "doping" of silicon to produce solid-state diodes.[110] In some cases, it is the desire of the manufacturer to reduce the content of impurities in order to improve the properties of the material. In other cases, obtaining a material without any impurities may generate new properties

109 *See,* Thorsten Beyerlein, *The Need and Purposes of a "Nanotechnology Act" in Germany and Europe*, Nanotechnology Law & Business, December 2007, p 545, *supra* note 37.

110 For example patent EP1008157B1 *Thin Film Capacitor Using Diamond-Like Nano-composite Materials, filed in 1996.*

on the material. These two referred cases, control of impurities and "doping", may bring two different results in assessing patentability.

In principle, it should be noted that if the prior art encourages reducing the level of impurities in order to improve the properties of the material, the absence of impurities might not lead to the generation of a new patentable composition of matter, even if the nanotechnological process under use is new. On the contrary, if the properties obtained by the material free of impurities generate new or radically different effects not disclosed by the prior art, the patentability requirement may be fulfilled.

In a relevant case, the TBA first considered that "a document disclosing a low molecular chemical compound and its manufacture makes available this compound to the public in the sense of Article 54 EPC in all grades of purity as desired by a person skilled in the art."[111] The decision indicates that if a product is in the prior art, with a particular content of impurities, such disclosure anticipates the product with any amount of impurities, including the product free of them. However, in identifying novelty indicators the court said that the product can be considered new "[in those exceptional situations] where it was proved on the balance of probability that all prior attempts to achieve a particular degree of purity by conventional purification processes had failed."[112] By this decision, products of higher purity may be considered new in cases where alternative processes to manufacture the product with such level of purity were unknown, but the burden of proving exceptionality will be on the patentee side.[113] While patentability of a new process capable of manufacturing a known material with a lower level of impurities is not complex to determine, it is not so clear why the EPO considers that the material itself can be patented and not anticipated by the prior art in cases where no additional or disruptive properties are generated.

Alternatively, the case of patentability of high purity materials should be approached from the "unexpected results" view, a concept that has been applied in the past to solve complex patentability issues in the fields of organic and polymer chemistry.[114] Based on this criterion, in assessing novelty of the invention the EPO should evaluate the new properties generated by the absence of impurities in the material and compare those properties with the solution they solve. If such

111 T 0990/96.

112 *Id.*

113 *Id.*

114 US Courts have approached the problem from a different perspective, indicating that a non-purified material doesn't anticipate its pure form. For example, In re Kratz, 592 F.2d 1169, 1174 (CCPA 1979) the court said "stating that a naturally occurring strawberry constituent compound does not anticipate claims to the substantially pure compound", or In re Bergstrom, 57 C.C.P.A. 1240, 427 F.2d 1394, 1401-02 (CCPA 1970) stating that "a material occurring in nature in less pure form does not anticipate claims to the pure material".

properties help to solve a different problem apart from what is disclosed or promoted by the prior art, the invention should be in a better position to be considered new and patentable.

4. The inherent properties

An invention may be anticipated not only by its explicit characteristics but also by the intrinsic or inherent particularities disclosed in the prior art. This premise has been applied in many cases at the EPO.[115]

One of the most relevant cases for the problem of inherent properties is the Mobil Oil III case.[116] Here, the TBA analyzed the relevance in assessing novelty of a prior publication disclosing the use of a compound for a defined purpose (lubricant) on a patent protecting a new use of such compound, where the compound is performing a new purpose (anticorrosive).[117] The court faced the question if the use of the substance inherently anticipated the use as a lubricant.[118] The court ruled that "[…] such new use may reflect a newly discovered technical effect described in the patent. The attaining of such a technical effect should then be considered as a functional technical feature of the claim. If that technical feature has not been previously made available to the public by any of the means as set out in Article 54(2) EPC, then the claimed invention is novel, even though such technical effect may have inherently taken place in the course of carrying out what has previously been made available to the public."[119]

According to this decision, to invalidate a patent based on the presence of inherent properties, the plaintiff needs not only to demonstrate the existence of such inherent property, but also to prove the "availability to the public" of it, according to the definition of Article 54(2) of EPC. In order to be novelty destroying, the prior art must provide a clear, unambiguous and enabling disclosure of the inherent properties.[120] In this way, an inherent feature is considered made available to the public if the feature per se has become part of the state of the art or can be derived by a person skilled in the art.[121] Nevertheless, this is not usually the case with

115 *See,* for example, T 059/87.

116 G 02/88.

117 *Id.*

118 *Id.*

119 *Id.*

120 T 179/01

121 Caroline Pallard, Nederlandsch Octrooibureau, *Novelty of biotechnological inventions and further therapeutic use in Europe*, IP in the life sciences industries 2008, IAM Magazine, 2008, p 35-36.