

## JAPAN

## IP High Court denies infringement of lithium ion battery patent

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The electric vehicle (EV) market is expanding more than expected, and battery manufacturers and component manufacturers are accelerating investments in lithium ion battery equipment across the globe. Under this circumstance, a lawsuit was filed against infringement of a patent for a lithium ion battery.

### Summary of the case

Mitsui Mining & Smelting (MMS) is the owner of the patent titled "Process for Preparing Lithium Manganese Oxide in Spinel Structure" (JP4274630).

JGC Catalysts and Chemicals (JGC) manufactured and sold a total of 3,722 tons of lithium manganese oxide in spinel structure for the period commencing on January 1, 2010 and ending on October 31, 2013.

MMS filed a lawsuit against JGC alleging that JGC's process for preparing lithium manganese oxide in spinel structure infringes their patent.

### Judgment of July 10 2014, Tokyo District Court

The Tokyo District Court (Presiding Judge Hasegawa) granted MMS's claim against JGC to the extent of seeking (1) an injunction against the use of JGC Process 1, (2) an injunction against the use etc. of JGC Product 1 and the disposal thereof, and (3) payment of ¥111,660,000 as damages equivalent to a royalty.

The Tokyo District Court judged that the invention has an inventive step as follows:

D12 presents the observation that it is preferable to minimise the amount of

sodium contained in electrolytic manganese dioxide in view of improving the battery characteristics. In addition, D15 mentions that the material that should be preferably used as a lithium-manganese composite oxide is  $\text{Li}_x\text{MnO}_y$ , not a material in spinel structure. What is more, the burning temperature of the mixture of manganese dioxide and lithium ( $380^\circ\text{C}$ ) in the example cited in D15 is significantly different from that of the invention ( $750^\circ\text{C}$  or higher). Besides, the sodium compounds etc. contained in the lithium manganese oxide in spinel structure referred to in D18 are used as additives and are not used as neutralising agents. Thus, there is no ground for the allegation of lack of inventive step as explained in D11 as the main prior art.

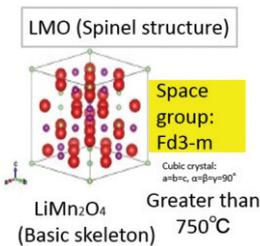
JGC appealed to the IP High Court.

### Judgment of March 30 2016, IP High Court

The IP High Court (Presiding Judge Shimizu) rescinded the original judgment in terms of the part unfavourable to JGC and dismissed MMS's claim, stating that the patent is invalid due to lack of inventive step and that JGC is not found to be using a manufacturing process that falls under the technical scope of the corrected invention.

#### 1) Lack of inventive step

The IP High Court judged that the invention lacks inventive step as follows: In relation to the well-known problem to achieve an improvement in high temperature storage stability and cycle characteristic by restraining the elution of manganese, there is a known means that can restrain the elution of manganese through the incorporation of sodium into the crystal structure of lithium man-



gane oxide in spinel structure (D18). It was also widely known that in the case of using electrolytic manganese dioxide neutralised by sodium hydroxide as a raw material for a lithium-manganese composite oxide (D15), contained sodium is incorporated into the crystal structure of the lithium-manganese composite oxide.

Consequently, a person ordinarily skilled in the art can easily conceive of the idea of using the widely known means of incorporating sodium to resolve the well-known problem of improving the high temperature storage stability and the cycle characteristic and, in this step, incorporating sodium into the crystal structure of  $\text{LiMn}_{1.85}\text{Li}_{0.1}\text{Al}_{0.05}\text{O}_4$  through the use of electrolytic manganese dioxide, which is widely known to contain sodium when neutralised by sodium hydroxide, as a raw material (D15) and thereby restraining the elution of manganese.

#### 2) Whether JGC is using a manufacturing process that falls under the technical scope of the corrected invention

The IP High Court found that JGC is not using a manufacturing process that falls under the technical scope of the corrected invention as follows:

MMS has submitted a report prepared by its employees, an experimental result certificate, and other documents in an attempt to prove that GS Yuasa manufactured and sold Max batteries using the lithium manganese oxide of JGC. However, it is uncertain whether GS Yuasa purchased lithium manganese oxide only from JGC, and there is no evidence that directly corroborates that the lithium ion batteries obtained by MMS as Max batteries and used for the analysis referred to in the experimental result certificate were

those manufactured and sold by GS Yuasa.

Thus, it is impossible to find from the aforementioned evidence that the process of JGC for manufacturing lithium manganese oxide in spinel structure falls under the technical scope of the corrected invention.

### **Practical tips**

The Tokyo District Court and the IP High Court made diametrical findings regarding inventive step. The Tokyo District Court put emphasis on the fact that sodium compound etc. contained in D18 was used as additive, and not used as a neutralising agents for adjusting pH of electrolytic manganese dioxide. On the other hand, the IP High Court did not emphasise this point. This can be understood that this is because the IP High Court put emphasis on the fact that there is no evidence supporting that there are some common technical knowledge showing the reaction behavior of sodium at burning differs between when sodium is used as additive and when it is used as a neutraliser of electrolytic manganese dioxide.

MMS adopted a strategy of proving the lithium manganese oxide used for Max batteries to be those manufactured by JGC with many pieces of indirect evidence when direct evidence was lacking. However, the IP High Court found that MMS failed to prove it indisputably. The finding of the IP High Court shows that it is extremely difficult for MMS to prove the lithium manganese oxide to be a product of JGC with indirect evidence, and MMS has no choice but to prove it with the cooperation of GS Yuasa and Max. It is advisable, for any enterprise, to have some predetermined measures in anticipation of the possibility that you might be requested by customers or any third party to provide cooperation to disclose information about your products.