

## **Additive Manufacturing of Bonded Permanent Magnets using a Novel Polymer Matrix**

### **Disclosure Number**

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### **Technology Summary**

This invention disclosure reports a method of direct manufacturing of bonded magnets using a polymer extrusion based additive manufacturing and a new composition of matter. The bonded magnet fabrication process generally involves mixing magnet powders with a polymer resin (typically a thermoplastic) and an antioxidant and produces various shapes and sizes of magnets through injection molding, roll molding, compaction molding and extrusion molding. It is desirable to maximize the magnetic particle loading to achieve optimum magnetic properties for the bonded magnet. During the bonded magnet fabrication process, magnetic fields are used to preferentially orient the magnetic particles. In addition to high magnetic properties, it is preferable to have high mechanical flexibility. We have identified polymers that are suitable to fabricate bonded magnets with high loading of Nd<sub>2</sub>Fe<sub>14</sub>B based magnetic powders.

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