



ICEM2020 – Gothenburg, Sweden, August 23-26, 2020

Special Session on

Innovative magnetic materials for electromagnetic devices

Organized and co-chaired by:

Luca Ferraris, Politecnico di Torino, Italy, luca.ferraris@polito.it

Carole Henaux, Université Toulouse III, France, henaux@laplace.univ-tlse.fr

Call for Papers

Over recent years the electromagnetic devices design has been deeply influenced by the availability and always more frequent adoption of new magnetic materials, which allow to modify the approach to the machine design, and to obtain shapes otherwise impossible. Deep innovations are nowadays at disposal on both soft and hard magnetic materials: on one side the so called Soft Magnetic Composites (SMC), and on the other the bonded magnets. SMCs, constituted by iron particles covered with binders to provide eddy currents insulation and mechanical strength, make possible to replace the traditional laminated steels and realize new magnetic shapes; bonded magnets can represent a valid compromise between cheap ferrites and performing sintered magnets. A lot of research is being carried out to develop the cited innovative materials, to provide specific methodologies for their characterization and to adopt them in the realization of electric machines prototypes. Moreover the 3D printing technologies are now well adapted to use those type of new materials and permit to extend the field of innovative structures of machines. In the use of soft materials the magnetic losses should represent a key issue: the behavior comparison of SMCs and laminated steels highlights interesting perspectives when the frequencies are in the range of more than one kHz. On the other side bonded magnets characteristic can be adapted to the specific requirements of the applications by varying the composition of the magnet. This Special Session welcomes research papers showing studies on innovative magnetic materials, their characterization and adoption in the realization of electromagnetic devices.

Topics of interest include, but are not limited to:

- Innovative magnetic materials
- Soft Magnetic Composites (SMC)
- Magnetic losses identification and separation
- Bonded magnets
- Magnets characterization
- Magnetization pattern
- Novel electrical machine topologies adopting innovative material
- Prototypes realization and testing
- 3D printing

Submission of papers: deadline follows the deadline for the regular papers.
All the instructions for paper submission are included in the conference website:
<http://www.icem.cc/2020>