

EUROMAT 2017/ Symposia Structure/Area H

Title: Critical Materials: Impact on Near-term Advanced Energy Technologies		
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Summary		
<p>Societies' rapidly expanding utilization of energy has an indisputable impact on quality of life and the environment on a global scale. Energy technologies require raw materials, some of which are subject to supply risks, price volatility or concerns about long-term availability. These supply challenges, both actual and potential, can threaten the development and deployment of emerging energy technologies. Overcoming these challenges depends on one or a combination of three approaches: expanding and diversifying primary material supplies, reducing wastes and developing substitute materials. Persistent attention, rather than temporary panic, is the key to avoiding the negative consequences of supply challenges. This symposium covers the use, optimization and/or substitution of critical materials in energy applications. A commonality between alternative energy technologies and high efficiency fossil fuel technologies is the conversion of energy into mechanical work.</p> <p>This symposium will include discussions of economically driven causality critical materials have on adaptation of higher efficiency energy technologies and applications. Both hard and soft magnetic materials used in energy conversion devices including magnetic refrigeration will be discussed. Innovative technologies and material solutions which mitigate cost and supply problems including process engineering approaches that would enhance availability of critical materials will be a primary focus area of the symposium. Presentations on topics relevant to the efficient use of rare-earth materials, near critical energy storage materials, substitute magnetic materials, nanocomposite magnets, and materials relevant to non-permanent magnet applications (soft and semi-hard magnet materials) are encouraged. Finally, magnetic materials relevant to the specific demands of energy conversion for applications such as wind, land-based and marine transportation, and power conversion, and the use and development of high performance carbon-based materials, especially those manufactured from renewable resources for energy applications including Li-ion batteries and fuel cells, will also be topics for presentations.</p>		