DISIT Seminar Series

2026

Wednesday 28th OCTOBER

14.30 - 15.30

Room 203

Critical Raw Materials and Chemical Elements

Prof. Elio Giamello

Università degli Studi di Torino

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Critical Raw Materials and Chemical Elements

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The issue of critical raw materials has become increasingly important in recent years. This is due to several factors, foremost among them the continuous and increasingly intensive exploitation of natural resources, which has surged and grown exponentially since the middle of the last century. Added to this is a more recent factor related to the materials needed for the increasingly widespread information and communication technologies (ICT), as well as those required for the energy system's transition to a novel system based on renewable energy. Some of the chemical elements used in new technologies are scarce or have already been heavily exploited in the past. For some of them, there is a risk of depletion in the not-too-distant future. For this reason, the issue of the intelligent use of these precious resources is urgent and must be based on the concept of reusing and recycling every possible material. We will address this complex issue from a chemical perspective, starting with the elements of Mendeleev's periodic table and their abundance. However, it is impossible to ignore the geological implications that determine the actual availability of a given element and the economic and geopolitical issues that determine the overall availability of a given raw material. We will address this complex picture by concluding with some specific examples related to elements that are particularly interesting such as lithium, gold, rare earths and phosphorous.

References

1. E. Giamello, Materie prime che muovono il mondo: rare, critiche, contese, 2026, Il Mulino, Bologna

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