

**Transition metal complexes for Sustainable Catalysis
and Biological Applications for Asymmetric Catalysis**

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The activity of this Research Unit is centred on:

- *catalytic conversion of vegetable oils* into biodiesel, surfactants, monomers, solvents and plasticizers. Chemistry deals with trans-esterification/esterification of triglycerides, oxidation of unsaturated fatty acids and valorisation of glycerol. Attention is paid to the development of catalysts that allow the use of raw materials of low quality, such as waste oils, which are easily available and inexpensive. Emphasis is addressed to Lewis acid catalysts based on cheap metals, such as tungsten, iron or zinc. Furthermore, to eliminate the problems related to corrosion, toxicity and purification of the reaction products, it is also studied their heterogeneization on matrix, to favor separation and recycling.

- *design of metal complexes having anti-tumor activity* which contain carbohydrate-derived ligands, to exploit the ability of selective recognition by tumor cells (Warburg effect). Sugars can be modulated through the targeted introduction of substituents. This choice makes it possible to prepare wide and versatile libraries of complexes, to check and compare their structural properties, aggregation capacity in complex systems suitable to convey them, and biological activity.

Keywords: Lewis acid catalysts; vegetable oils; platinum complexes; biological activity; sugar ligands

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SUPPLEMENTARY MATERIAL

Detailed list of the components of the research groups
(*permanent staff, included graduated students and postdocs*)

Name	Surname	Position *	Affiliation
Alfonso	Annunziata	PhD	Università di Napoli Federico II
Maria Elena	Cucciolito	RU	Università di Napoli Federico II
Roberto	Esposito	PoD	Università di Napoli Federico II
Francesco	Ruffo	PA	Università di Napoli Federico II

*: PO = full professor; PA = associated professor; RU = university researcher; PhD = graduated student; PoD = postdoctoral fellows; RC = CNR staff; T = technician

Apparatus
(*minimum value 25.000 € per item*)

Type	Producer	Year of acquisition
Bruker 400 NMR spectrometer	Bruker	2014
Bruker Nonius kappaCCD diffractometer	Bruker	2004

Technical skills

- Organometallic and organic syntheses;
- Knowledge of FT-NMR techniques;
- Knowledge of X-ray diffractometric techniques
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