

Valentina Toson

Curriculum vitae

PERSONAL DATA

Born in Valenza at 19.08.1989

Resident in Moncalvo

BIO AND EDUCATION

Good knowledge in material science and on the use of Raman spectrophotometer and thermobalance were acquired in the last years. Moreover, skills were developed in the synthesis and characterization of inorganic materials. Degree in chemical technician in 2008 at Ascanio Sobrero Institute, Casale. First level graduated in Chemistry Science in 2011 and second level in Chemistry in 2014 at University of Eastern Piedmont, Alessandria. In 2014 begin of PhD pathway, under supervision of Professor Boccaleri and Dott. Milanesio.

UNIVERSITY CAREER

2015-2016	Teaching support for Material Science and Biology Courses at the venue of Vercelli, University of Eastern Piedmont
2014-	PhD XXX Cicle "Chemistry and Biology", University of Eastern Piedmont
2012-2014	Researcher fellow at Material group of Boccaleri and Milanesio, University of Eastern Piedmont

MAIN FIELDS OF INTEREST

1. Natural and Synthetic Clays
2. Layered Double Hydroxide (LDH; Hydrotalcite)
3. Dyes and fluorophores for innovative application in PV device
4. Rice husk and concrete

CURRENT ISSUES OF RESEARCH

1. Natural and Synthetic Clays

The synthesis and the variety of innovative applications of synthetic and natural clays are depth studied. The statistical tools for design of experiments and analysis results are applied, in order to evaluate the experimental conditions effects on physical-chemical properties. Organo-inorganic

hybrid compounds are synthesized in order to improve the chemical and thermal stability of organic ones, and for new unprecedented applications.

2. Layered Double Hydroxide (LDH; Hydrotalcite)

Hydrotalcite are inorganic materials, similar to natural clays but with the peculiarity to have anionic change capacity. Thanks to this and the swelling capacity, the easy exchange with inorganic an organic anion is allowed. Liquid Assisted Grinding (LAG) synthesis is the fast, clean and easy of exchange methodology developed in our laboratory. Through the application of statistical tools, the optimization of experimental conditions of synthesis and the rationalization of results were obtained.

3. Dyes and fluorophores for innovative application in PV device

Dyes used in DSSC and photovoltaic device suffer of low thermal and chemical stability. The incorporation and intercalation into inorganic layered and porous supports improve the thermal and chemical environment stability, enhancing the efficiency and lifetime of devices. The support synthesis and the dye modification are widely studied to understand the effect on optic and thermal features.

4. Rice Husk and Concrete

Rice husk is considered a difficult waste disposed. The aerobic and anaerobic fermentations are complicated and the fine silica ash, toxic for breathing apparatus, are formed by combustion. Thank to this difficult dispose and the interesting chemical compositions, the rice husk was requalified. The conversion of husk in upper value material is depth studied in our laboratory. The main aim is the application of clean, easy and environmentally low cost experimental conditions.

TOP FIVE PAPERS

1. E. Conterosito, I. Benesperi, V. Toson, D. Saccone, N. Barbero, L. Palin, C. Barolo, *ChemSusChem* **2016**, 9, 1 – 12, “High-Throughput Preparation of New Photoactive Nanocomposites”
2. V. Toson, E. Conterosito, L. Palin, E. Boccaleri, M. Milanese, V. Gianotti, *Crystal Growth & Design* **2015**, 15 (11), 5368–5374, “Facile Intercalation of Organic Molecules into Hydrotalcites by Liquid-Assisted Grinding: Yield Optimization by a Chemometric Approach”

FURTHER INFORMATION