

## Science Bridges China Research Profile

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### SUMMARY OF MY RELEVANT RESEARCH AREAS:

- Synthesis and modification of polymers
- Degradation and stabilization of polymer materials
- Polymer/inorganic composite materials
- Environment friendly polymer materials

- 高分子合成与改性
- 高分子材料的降解及稳定化
- 聚合物/无机物复合材料
- 环境友好高分子材料

### Primary Research Interests:

- Polymer synthesis and modification by emulsion polymerization, controllable polymerization and blending/Synthesis of polylactide macro-initiator and polylactide-block-polymethyl methacrylate / Controllable radical polymerization of vinyl monomers and its application in modifying polymers
- Degradation rules of polymer materials, e.g., polylactide and polycarbonate, under environment factors, such as., ultraviolet irradiation, hot water, chemicals and atmosphere, and the stabilization of polymers
- Environmental friendly polymer materials, e.g., biodegradable PLA, polymer/TiO<sub>2</sub> composite photo-catalytic materials used for treating waste water and for cleaning air.

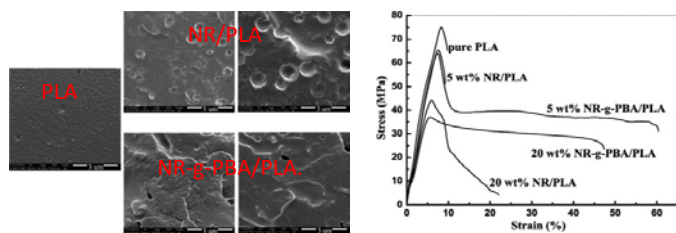
### Topics in which you would like to develop collaborative research:

- **Research on preparation, structure and properties of PLA toughened by NR**
- **Research on interface structure and performance of conjugated polymer/TiO<sub>2</sub> composites**

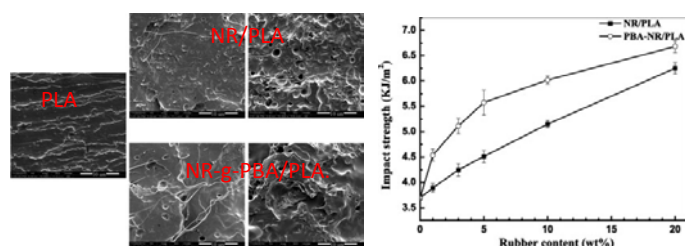
## Relevant existing collaborations (academic/clinical/commercial) inside or outside China.

- Institut des Matériaux Jean Rouxel, CNRS, University of Nantes, France
- Sinopec Sichuan Vinylon Works, Chongqing, China

## Relevant graphics, figures, pictures:



Freeze-fractured surfaces (left) and tensile performance (right) of PLA, NR/PLA and NR-g-PBA/PLA.



Charpy-impact-fractured surfaces (left) and impact performance (right) of PLA, NR/PLA and NR-g-PBA/PLA

## Publications and other outputs relevant to your interest in this programme

1. Shoubin Xu, Long Jiang, Yi Dan\*, The influence of the oxidation degree of poly(3-hexylthiophene) on the photocatalytic activity of poly(3-hexylthiophene)/TiO<sub>2</sub> composites, *Solar Energy Materials and Solar Cells, Solar Energy Materials & Solar Cells*, 2012, 96, 286–291
2. Chunmei Zhang, Changzhen Man, Weiwei Wang, Long Jiang, and Yi Dan\* , Degradation of Poly(L-lactide) Films under Ultraviolet Irradiation and Water Bath, *Polymer-Plastics Technology and Engineering*, 2011, 50, 810–817
3. Chunmei Zhang, Changzhen Man, Yonghao Pan, Weiwei Wang, Long Jiang and Yi Dan\*, Toughening of polylactide with natural rubber grafted with poly(butyl acrylate), *Polymer International*, 2011, 60(1), 1548-1555
4. Wuyang Ren, Long Jiang, Weiwei Wang, and Yi Dan\*, The Application of Copper(II) Deactivator on the Single-Electron Transfer Living Radical Polymerization of Tert-butyl Acrylate, *Journal of Polymer Science Part A: Polymer Chemistry*, 2010, 48, 2793–2797
5. Weiwei Wang, Wuyang Ren, Long Jiang, Yi Dan\*, Synthesis and Characterization of AB-type Copolymers Poly(L-lactide)-block-poly(methyl methacrylate) via a Convenient Route Combining ROP and ATRP from a Dual Initiator, *Journal of Applied Polymer Science*, 2010, 118, 2379–2388
6. Yunfeng Zhu, Yi Dan\* , Photocatalytic activity of poly(3-hexylthiophene)/titanium dioxide composites for degrading methyl orange, *Solar Energy Materials & Solar Cells*, 2010, 94, 1658–1664
7. Gao Weibin, Han Shimin, Yang Minjiao, Jang long, Dan Yi\*, The effects of hydrothermal aging on properties and structure of bisphenol A polycarbonate, *Polymer Degradation and Stability*, 2009, 94, 13–17