DELFO GROUP

Dispositivos Electrónicos y Fotónicos Orgánicos

Organic Electronic and Photonic Devices

Beatriz Romero Herrero

Electrónic Technology Division, Escuela Superior de Ciencias Experimentales y Tecnología

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Resources

Members

Permanent

Beatriz Romero Herrero
(Associate Professor)

Belén Arredondo Conchillo
(Assistant Professor)

Postdoctoral students

Gonzalo del Pozo Melero (former member)

Predoctoral students

Mª Belén Martín López

Undergraduate students

Rodrigo Calvo Gago

Alexandra Ortega Martín

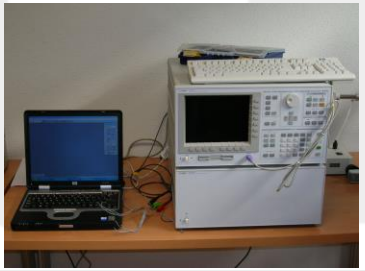
Facilities

Organic Devices Fabrication Line
(inert atmosphere)

- Flume Hood
  (UVO cleaner, scale and US bath)
- Mbraun Glove-box
  (spin coater, evaporator and vacuum oven)
- Alpha Step D120 Stylus profiler

Organic Devices Characterization Line

- I-V characteristics
- Impedance Spectroscopy



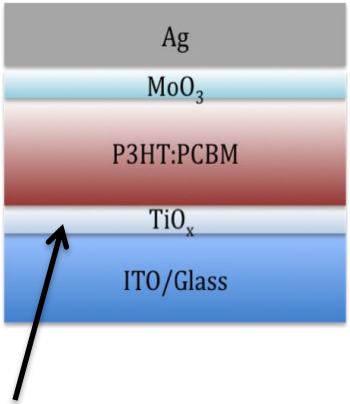
Stable Next-Generation Photovoltais: Unraveling degradation mechanisms of Organic Solar Cells by complementary characterization techniques

Universidad Rey Juan Carlos

DC Circuital Modelling

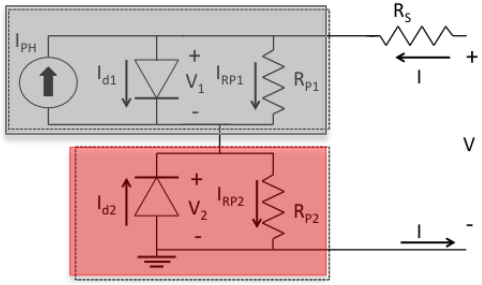
In collaboration with Sylvain Chambon Univ. Bordeaux, Talence, France

Evolution of S-shaped I-V curves in OSC with TiO_x as EBL

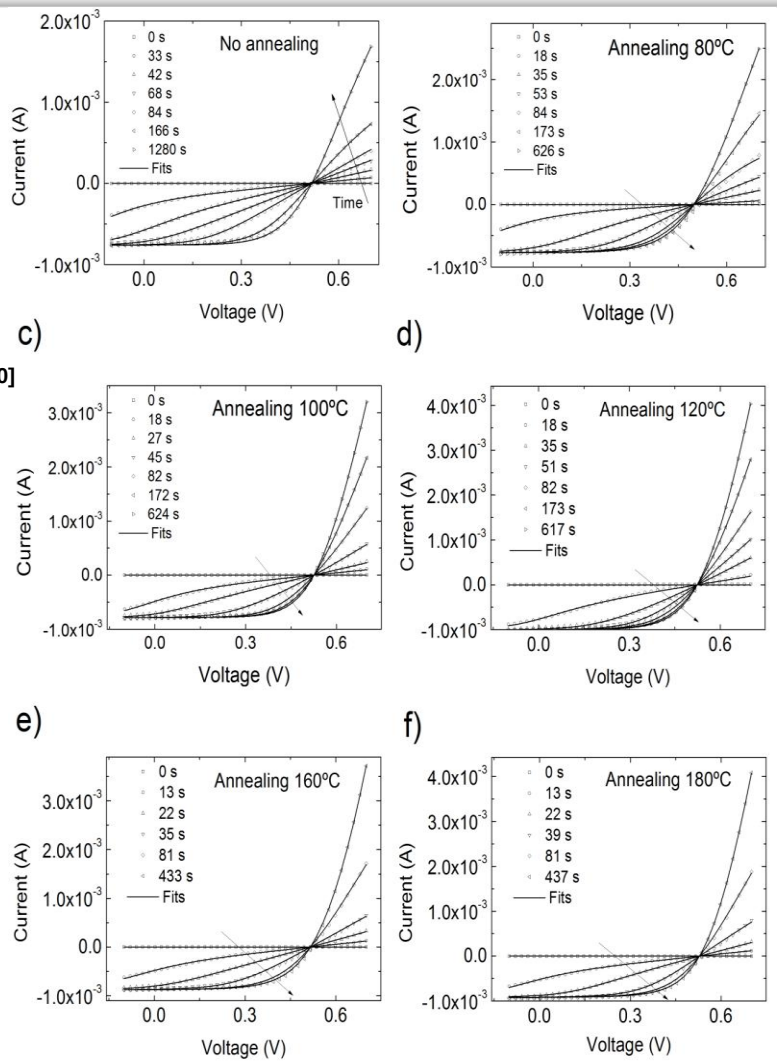


TiO_x annealing temperature:
0º, 80º, 100º, 120º, º60, 180º C

Model proposed by F. De Castro
[F. A. De Castro, IEEE J. Select. Topics in Q. Electron., 2010]



Analytical solution published by B. Romero
[B. Romero et al., Solar Energy, 2012]

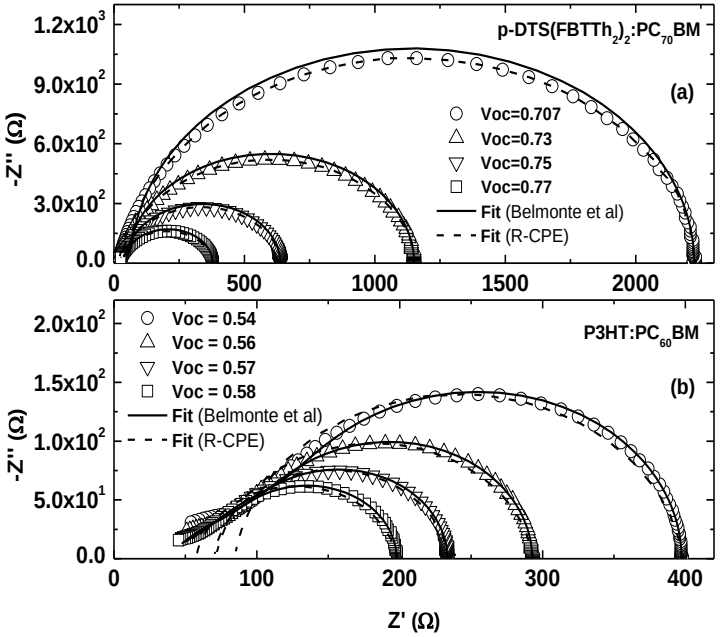


Circuital approach of S-shaped current-voltage characteristic in TiO_x inverted organic solar cells under white-light illumination
Accepted for publication in Organic Electronics, 2014

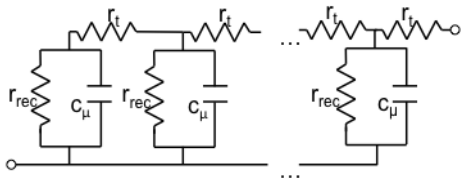
AC Circuital Modelling

In collaboration with Uli Würfel, Fraunhofer-ISE, Freiburg, Germany:

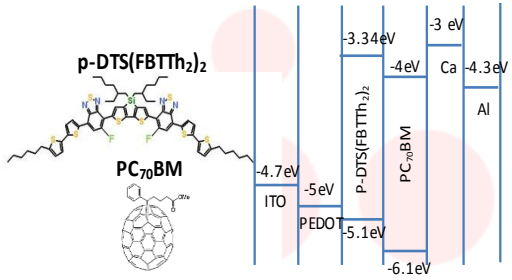
Impedance spectroscopy analysis of small molecule based OSC

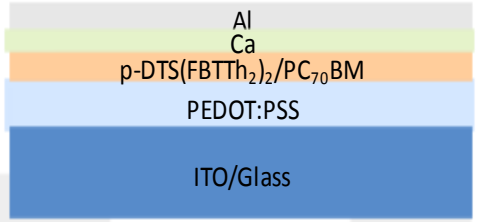


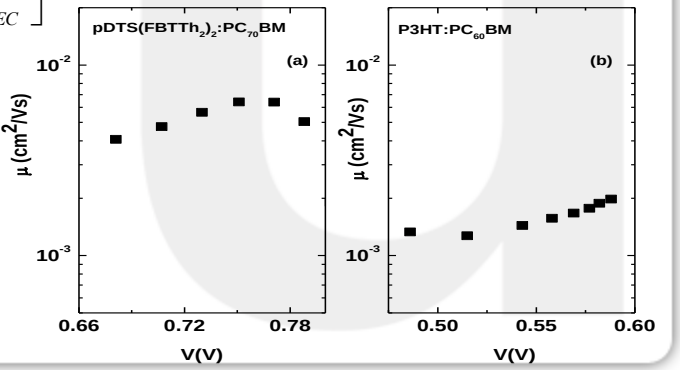
Model proposed by Bisquert
[**J. Bisquert, J. Phys. Chem, 2002]**



$$Z = \sqrt{\frac{R_t R_{rec}}{1+\frac{j\omega}{\omega_{REC}}}}\coth\left[\sqrt{\frac{\omega_{REC}}{\omega_d}}\sqrt{1+\frac{j\omega}{\omega_{REC}}}\right]$$





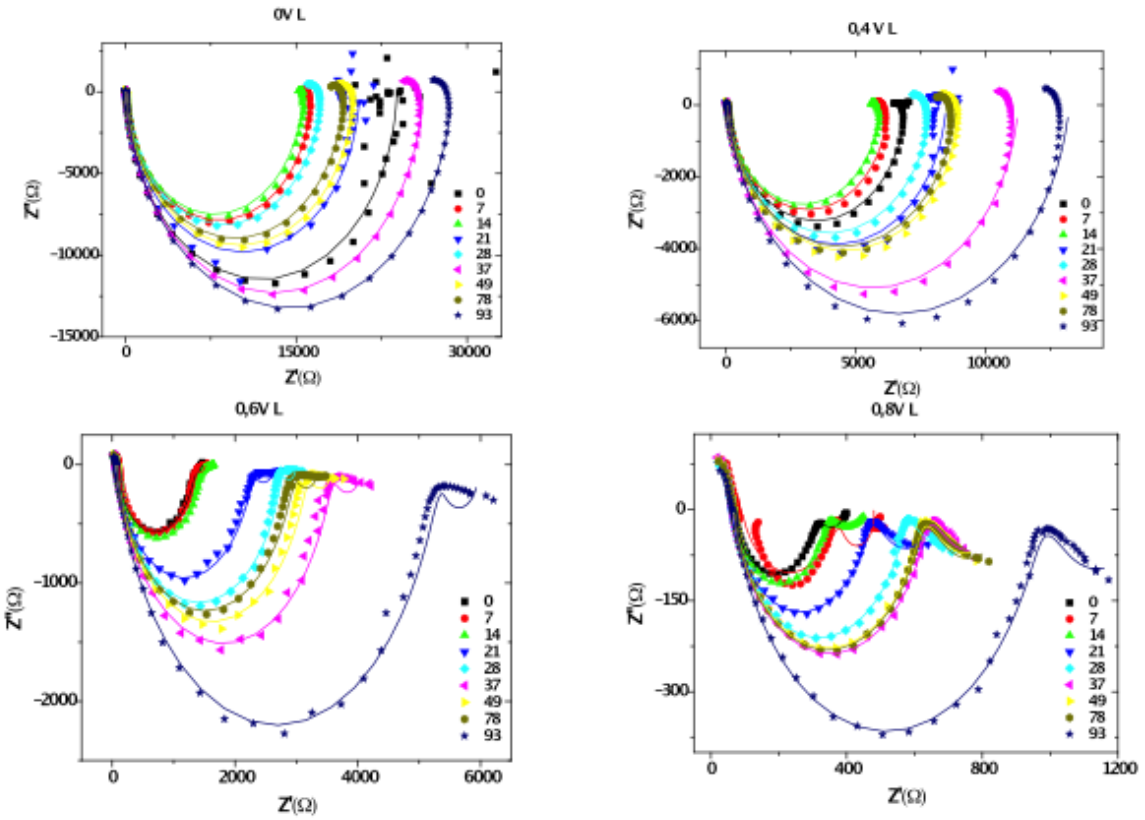


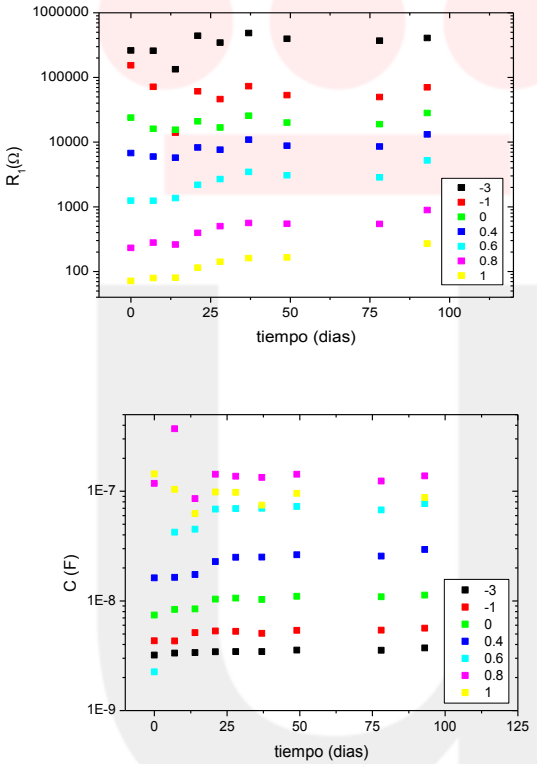
Impedance spectroscopy analysis of small molecule solution processed organic solar cell
Solar Energy Materials and Solar Cells, 128, 2014

AC Circuital Modelling

In collaboration with Jordi Martorell, ICFO, Barcelona

Degradation study by means impedance of PTB7:PCBM based organic solar cells





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