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Nota di contenuto	Stability and Degradation of Organic and Polymer Solar Cells; Contents; Preface; Acknowledgements; List of Contributors; 1. The Different PV Technologies and How They Degrade; 1.1 The Photovoltaic Effect and the Overview; 1.2 The Photovoltaic Technologies; 1.3 Intrinsic Versus Extrinsic Stability; 1.3.1 Intrinsic Stability; 1.3.2 Extrinsic Stability; 1.4 Degradation - The Culprits, the What, the Why and the How; 1.5 Some Representative Technologies and How They Degrade; 1.5.1 Mono- and Polycrystalline Silicon Solar Cells; 1.5.2 Amorphous, Micro- and Nanocrystalline Silicon Solar Cells 1.5.3 CIS/CIGS Solar Cells1.5.4 CdS/CdTe Solar Cells; 1.5.5 Dye-Sensitized Solar Cells (DSSC); 1.5.6 Organic and Polymer Solar Cells (OPV); References; 2. Chemical and Physical Probes for Studying Degradation; 2.1 Introduction; 2.2 Physical Probes; 2.2.1 UV-vis Spectroscopy; 2.2.2 Atomic Force Microscopy (AFM); 2.2.3 Interference Microscopy; 2.2.4 Scanning Electron Microscopy (SEM); 2.2.5 Fluorescence Microscopy; 2.2.6 Light-Beam Induced-Current

Microscopy (LBIC); 2.2.7 Electroluminescence and Photoluminescence Imaging Microscopy (ELI and PLI); 2.2.8 X-ray Reflectometry; 2.3 Chemical Probes  
2.3.1 Infrared Spectroscopy (IR) 2.3.2 Time-of-Flight Secondary Ion Mass Spectrometry (TOF-SIMS); 2.3.3 X-ray Photoelectron Spectroscopy (XPS); 2.4 Summary and Outlook; References; 3. Imaging Techniques for Studying OPV Stability and Degradation; 3.1 Introduction to Imaging Techniques; 3.1.1 Microscopy and Optical Scanning; 3.1.2 Luminescence Imaging; 3.1.3 Lock-In Thermography; 3.1.4 Light-Beam Induced Current; 3.2 Reports; 3.2.1 Background: Degradation of OLED Devices; 3.2.2 Light-Beam Induced Current; 3.2.3 Luminescence Imaging; 3.2.4 Optical Microscopy  
3.2.5 Dark Lock-In Thermography and LBIC 3.2.6 Dark Lock-In Thermography and Optical Scanning for Failure Analysis; 3.3 Discussion: Comparison of Imaging Techniques; 3.4 Summary; Acknowledgement; References; 4. Photochemical Stability of Materials for OPV; 4.1 Introduction; 4.2 Methods; 4.2.1 Aging Condition; 4.2.2 Degradation Monitoring; 4.3 State-of-the-Art; 4.3.1 Degradation of the p-Conjugated Polymer; 4.3.2 Acceptor Material Aging and Blend Degradation; References; 5. Degradation of Small-Molecule-Based OPV; 5.1 Comparison to Small-Molecule OLEDs  
5.1.1 Number of Photoexcitations per Molecule 5.2 Comparison to Polymer Solar Cells; 5.2.1 Sensitivity to Air; 5.2.2 Temperature Stability; 5.3 Small-Molecule Organic Materials; 5.3.1 Active Materials; 5.3.2 Transport- and Exciton-Blocking Materials; 5.4 Degradation Conditions; 5.4.1 Oxygen and Water; 5.4.2 UV Radiation; 5.5 State-of-the-Art in Lifetime Studies; 5.6 Summary and Outlook; References; 6. Degradation of Polymer-Based OPV; 6.1 Focus on the Degradation and Stability of Polymer Solar Cells; 6.2 A Chart of Degradation and Stability of Polymer Solar Cells  
6.3 A Short Account of the OPV Stability/Degradation History

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## Sommario/riassunto

Organic photovoltaics (OPV) are a new generation of solar cells with the potential to offer very short energy pay back times, mechanical flexibility and significantly lower production costs compared to traditional crystalline photovoltaic systems. A weakness of OPV is their comparative instability during operation and this is a critical area of research towards the successful development and commercialization of these 3rd generation solar cells. Covering both small molecule and polymer solar cells, Stability and Degradation of Organic and Polymer Solar Cells summarizes the

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