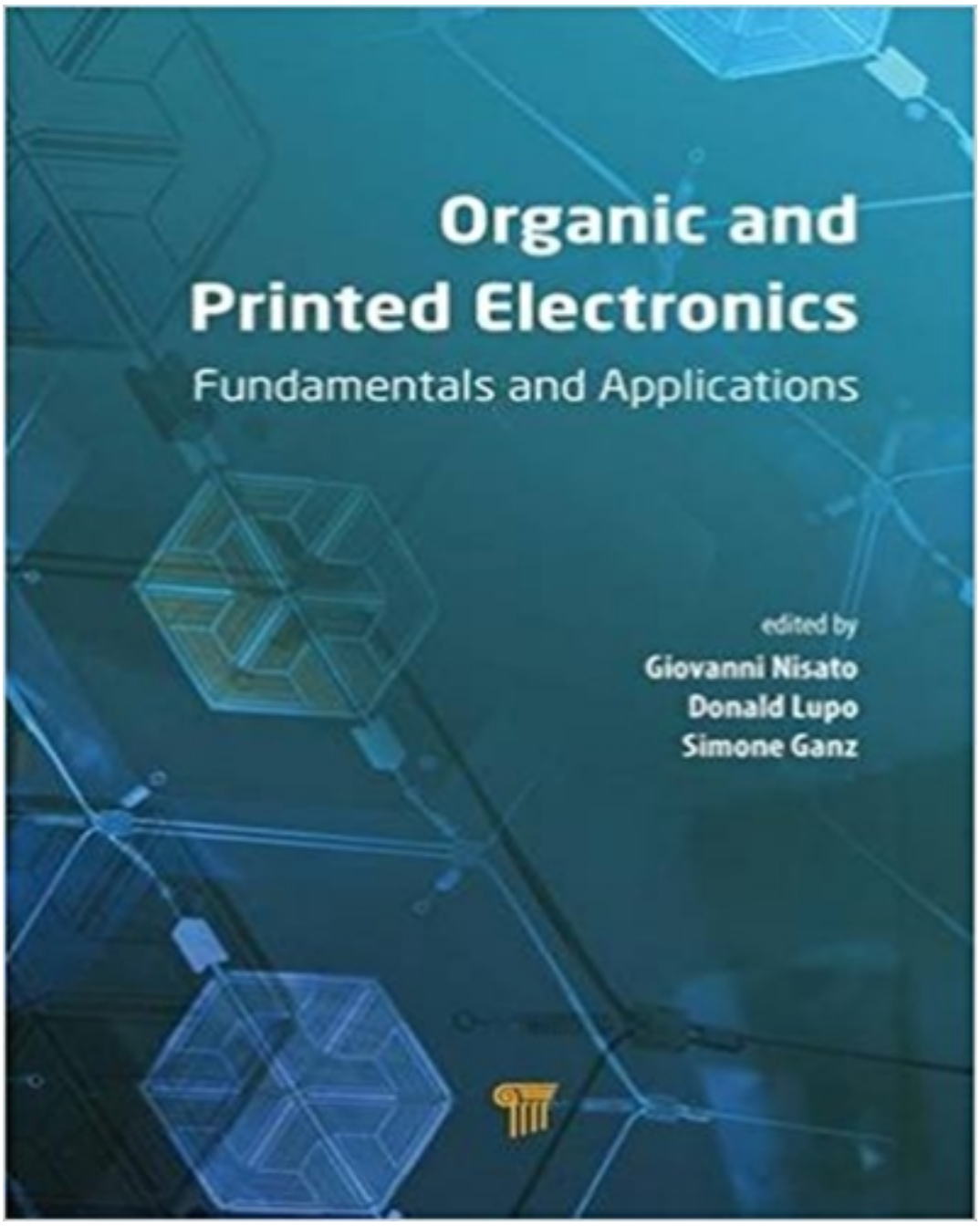
Solutions for Organic and Printed Electronics Fundamentals and Applications 1st Edition by Nisato



Solutions

Solutions to Exercises

Chapter 2

2.1 They will significantly increase for a small N but level off for a large N (see Eq. 2.6).

2.2 The work function of the conductor should be such that the majority of the carriers can be spontaneously transferred to the appropriate polaronic level in the semiconductor.

2.3 A donor molecule that donates charge should be adsorbed, causing a potential step to form at the interface that down-shifts the work function.

2.4 This is because localization occurs and activation is required for the carriers to be able to move.

2.5 Increased film order decreases the degree of localization of charges.

2.6 They are the mirror image of each other. There can be several vibronic levels at higher energies compared to the basic transition associated with each optical transition. Since both absorption and emission occur from the state with the lowest energy and to the vibronic levels, the absorption energy is increased and emission energy decreased for a specific vibronic level compared to the fundamental transition.

Chapter 3

3.1 Consider the flow velocity profile

$$\vec{v}(x,y,z)=\frac{1}{2\eta}(z^2-2h(x,y)z)\vec{\nabla}(\sigma\nabla^2h(x,y)-p_{\text{vol}})+\frac{z}{\eta}\vec{\nabla}\sigma$$