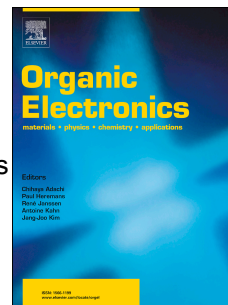


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Alanine induced structure reconstruction of PEDOT:PSS films in perovskite solar cells

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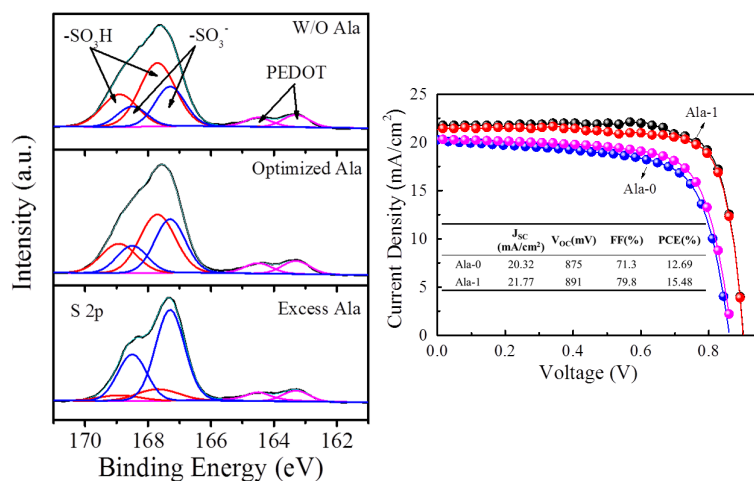
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From the figures, it can be obviously seen that the ratio of  $-\text{SO}_3\text{H}$  to  $-\text{SO}_3^-$  was decreased as the alanine increasing, indicating more  $-\text{SO}_3^-$  can be created than  $-\text{SO}_3\text{H}$ . The ratio of  $-\text{SO}_3\text{H}$  was rare in the excess alanine conditions. The integral area ratio of PSS to PEDOT calculated from figure 1 was slightly increased from 7.7 to 8.8 as the alanine increasing. The champion efficiency of the best cell with alanine modification was 15.5% with FF increased from 66% to 80% by a factor of 21%.

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