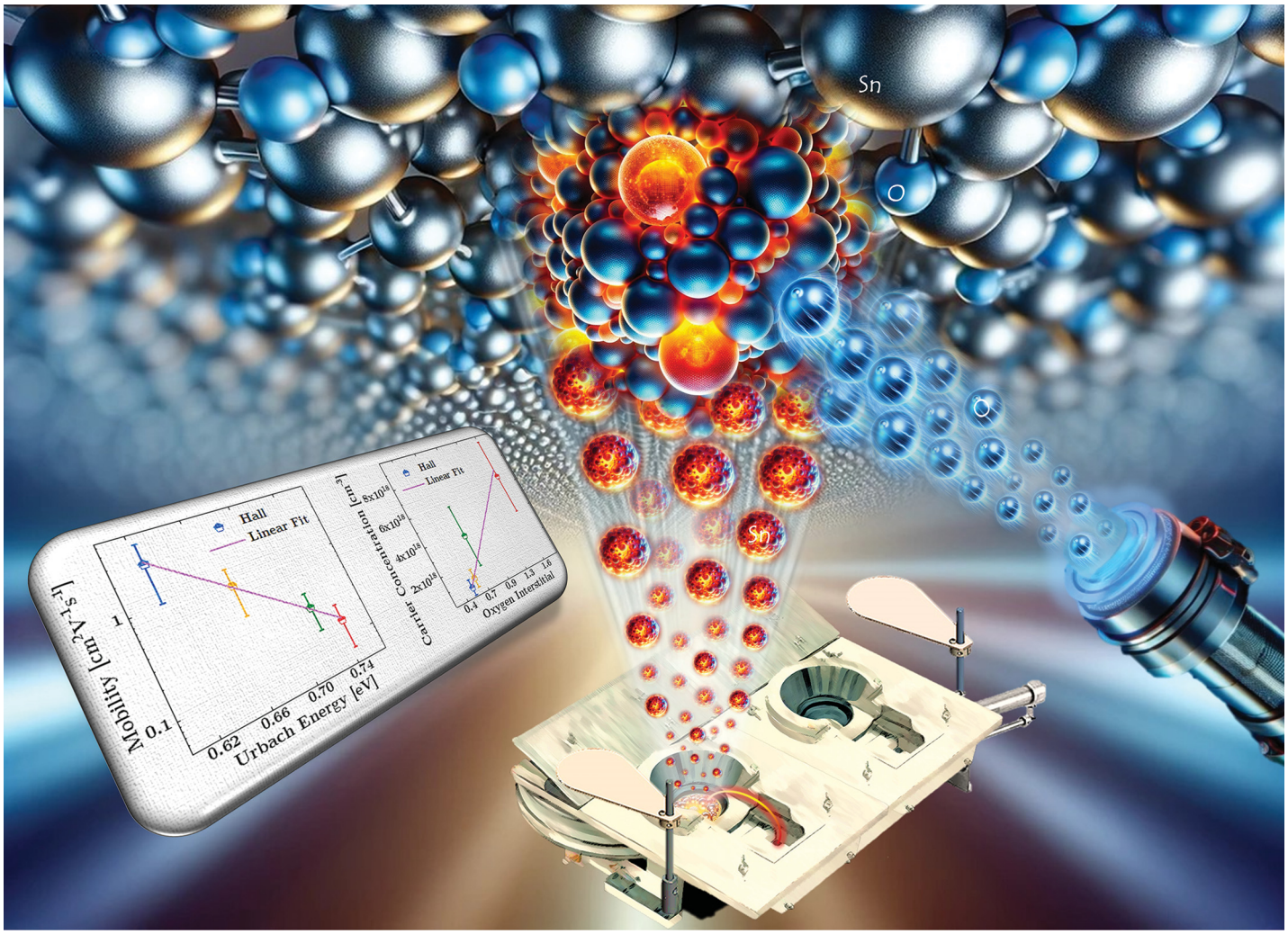
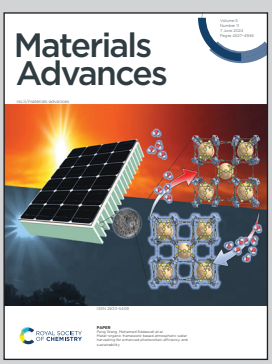


Showcasing research from the collaborative works of Professor Tsung-Yu Huang from the Department of Materials Engineering at Ming Chi University of Technology, Taoyuan, Taiwan, and Professors Chia-Ming Yang and Kou-Chen Liu from the Department of Electronic Engineering at Chang Gung University, Taoyuan, Taiwan.

Unveiling the nature of room-temperature-fabricated p-type SnO thin films: the critical role of intermediate phases, lattice disorder, and oxygen interstitials

The potential of ion-beam-assisted deposition (IBAD) was leveraged to develop fully room-temperature p-type tin monoxide (SnO) thin films, overcoming the challenges posed by SnO's anisotropy and metastability that typically require meticulous annealing. Our innovative approach yields promising electrical properties—2.67 $cm^2 V^{-1} s^{-1}$ Hall mobility and a hole concentration of 5.94×10^{17} cm^{-3}—without the need for annealing. Our research also uncovers crucial relationships, with mobility correlating with Urbach energy (indicative of lattice disorder) and carrier concentration linked to oxygen interstitials. These insights are driving progress in SnO applications, aiming to match the already high-performance n-type oxides through low-temperature processes.

As featured in:



See Tsung-Yu Huang, Chia-Ming Yang, Kou-Chen Liu *et al.*, *Mater. Adv.*, 2024, **5**, 4679.

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