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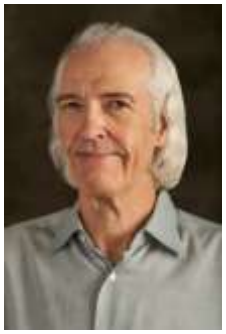

CV

Billy J. Stanbery is Research Professor of Metallurgical and Materials Engineering at Colorado School of Mines (Golden, CO) and Consultant at the National Renewable Energy Laboratory (NREL).

After two B.S. degrees in Mathematics and Physics at the University of Texas (Austin) – notably with the Nobel Laureate Professor Ilya Prigogine – he obtained his M.S. degree in Physics from the University of Washigton (Seattle) in 1982. In the meantime, he embarked on an industrial cereer that took him to The Boeing Company focusing on high-power silicon concentrator solar cells and pioneering $Cu(In,Ga)Se_2$ (CIGS) thin film photovoltaics attaining in 1989 the 25.8 % world record efficiency on 4-terminal thin-film tandems with CLEFT (cleavage of lateral epitaxial film for transfer) GaAs on CIS [1]. He then negotiated the donation of Boeing's CIGS assets to the University of Florida, where he pursued his doctoral studies in Chemical Engineering. In 2001 he founded the HelioVolt Corporation, where he raised $233M of private equity investments and where his team of 115 employees demonstrated UL & IEC-certified 0.6x1.2-meter monolithically integrated CIGS solar modules with 14.7±0.2% AM1.5G total-area efficiency with 92% yield. His recent review of CIGS photovoltaics [2] is a must read for those interested in the subject.

Billy'career goal is to leverage his experience, creativity, skills, and interpersonal network to effectively help create a more just and sustainable future for our world.

Venerdì 7 Ottobre 2022
Aula Magna Riccardo Ferro & Teams
ore 11.00

Materials Manufacturing Process Intensification for TW-Scale PV

Abstract

The challenge of mitigating both the long-term impacts of climate change and near-term socioeconomic disruption of such a swift transformation of our global infrastructure from its reliance on fossil fuels are undeniable. Reducing capital investment intensity, primary energy input density, and supply chain raw materials requirements for PV manufacturing are central metrics to both more robust supply chains and globally distributed production, and economically transformational since PV power is provided by durable assets that need no fuel.
This seminar will present analyses of opportunities and prospective impacts of combining second-generation thin film PV semiconductor device and materials technologies with manufacturing approaches embodying the chemical engineering principles of process intensification. Combining these will be shown to reduce the investment requirements for and resource extraction impacts of renewable energy infrastructure transformation, reducing our risk of delaying global decarbonization.

References

[1] M. A. Green, K. Emery, Y. Hishikawa, W. Warta, *Prog. Photovolt. Res. Appl.* **2008**, *16*, 435.
[2] B. J. Stanbery, D. Abou-Ras, A. Yamada, L. Mansfield, *J. Phys. Appl. Phys.* **2021**, *55*, 173001.