VINIF

PROJECT:

Synthesis of grafted and cross-linked polymer electrode membranes using radiation techniques for application in hydrogen fuel cells

Host organization: **Ho Chi Minh city University of Science, VNU**

Project manager: **Assoc. Prof. PhD. Chan Duy Tap**

CODE **VINIF.2020.DA08**

PROJECT SUMMARY

"Research on the synthesis of polymer electrode membranes (PEM) by combining grafting and cross-linking methods using nuclear radiation and applying a combination of structural analysis methods using nuclear and atomic spectra, and molecular and mechanical and electrochemical property analysis to study the structure–property relationship of proton exchange membranes for practical use in hydrogen fuel cells.

• Research on ETFE-PEM using cross-linking technique by radiation (first time) and then modifying the cross-linked ETFE-PEM using radiation technique (second time) to improve structural, mechanical and electrochemistry properties of cells.

• Modification of commercial Nafion membrane by irradiation technique and comparison with the ETFE-PEMs"

HIGHLIGHTS OF THE PROJECT

• Published 03 articles in international journals of Q1 rank.
• Published 02 articles in domestic journals (on the scoring list of Academic Councils).
• Completed master's degree program: 03.
• Currently supporting the training of 02 graduate students.

polymers advanced technologies

RESEARCH ARTICLE

Positron annihilation lifetime study of subnano level free volume features of grafted polymer electrolyte membranes for hydrogen fuel cell applications

Tran Duy Tap, Tran Hoang Long, Dinh Tran Trong Hieu, Lam Hoang Hao, Huynh Truc Phuong, Le Quang Luan, Tran Van Man

First published: 11 June 2022 | https://doi.org/10.1002/pat.5761 | Citations: 2

Funding information: Vingroup Big Data Institute (VINBIGDATA), Grant/Award Number: VINIF.2020.DA08

DOI: 10.31276/VSTE.64(2).03-09   PHYSICAL SCIENCES | PHYSICS

Investigation of the water states of poly(styrene sulfonic acid) grafted poly(ethylene-co-tetrafluoroethylene) copolymer using FT-IR analysis

Tran Trong Hieu Dinh[1], Hoang Hao Lam[2], Thanh Danh Tran[2], Quang Luan Le[3], Van Man Tran[2], Truc Phuong Huynh[2], Van Phuc Dinh[4], Anh Tuyen Luu[2], Kim Ngoc Pham[2], Duy Tap Tran[2*]

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[2]University of Science, Vietnam National University, Ho Chi Minh city
[3]Biotechnology Center of Ho Chi Minh city
[4]Institute of Fundamental and Applied Sciences, Duy Tan University, Ho Chi Minh city
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JOURNAL OF Applied Polymer SCIENCE

ARTICLE

Morphological characterization of grafted polymer electrolyte membranes at a surface layer for fuel cell application

Lam Hoang Hao, Tran Duy Tap, Dinh Tran Trong Hieu, Ekaterina Korneeva, Nguyen Van Tiep, Kimio Yoshimura, Shin Hasegawa, Shin-ichi Sawada, Tran Van Man, Nguyen Quang Hung, Luu Anh Tuyen, Van-Phuc Dinh, Le Quang Luan, Yasunari Maekawa ... See fewer authors

First published: 17 November 2021 | https://doi.org/10.1002/app.51901 | Citations: 4

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Science & Technology Development Journal, 24(3):2100-2109

Open Access Full Text Article   *Research Article*

Surface features of polymer electrolyte membranes for fuel cell applications: An approach using S2p XPS analysis

Lam Hoang Hao[1,2], Dinh Tran Trong Hieu[1,2,3], Tran Thanh Danh[1,2], Tran Hoang Long[1,2], Huynh Truc Phuong[2,4], Le Quang Luan[5], Tran Van Man[2,6], Luu Anh Tuyen[7], Pham Kim Ngoc[1,2], Tran Duy Tap[1,2,*]
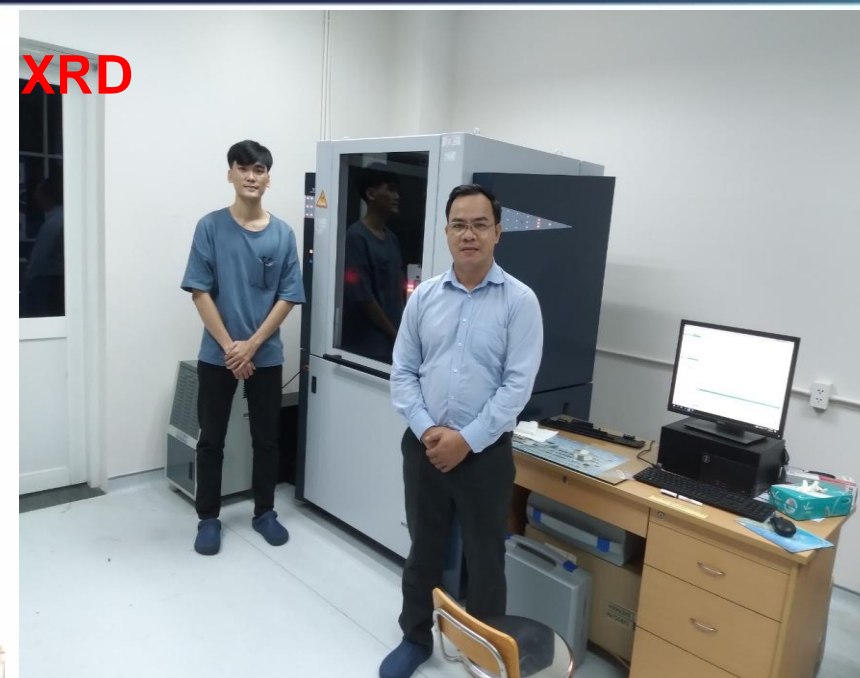
Cite this article : Hao L H, Hieu D T T, Danh T T, Long T H, Phuong H T, Luan L Q, Man T V, Tuyen L A, Ngoc P K, Tap T D. Surface features of polymer electrolyte membranes for fuel cell applications: An approach using S2p XPS analysis. Sci. Tech. Dev. J.; 24(3):2100-2109.
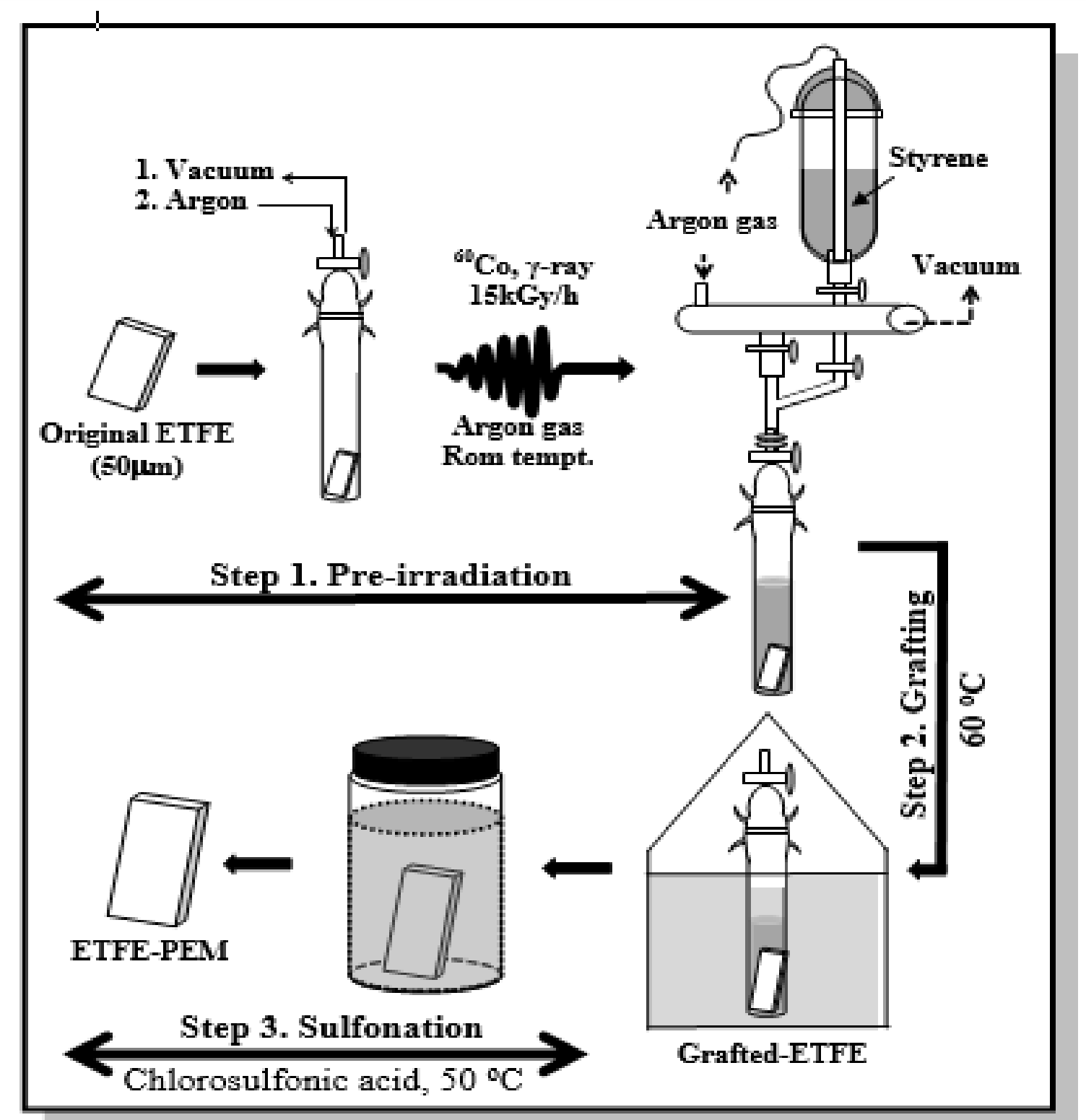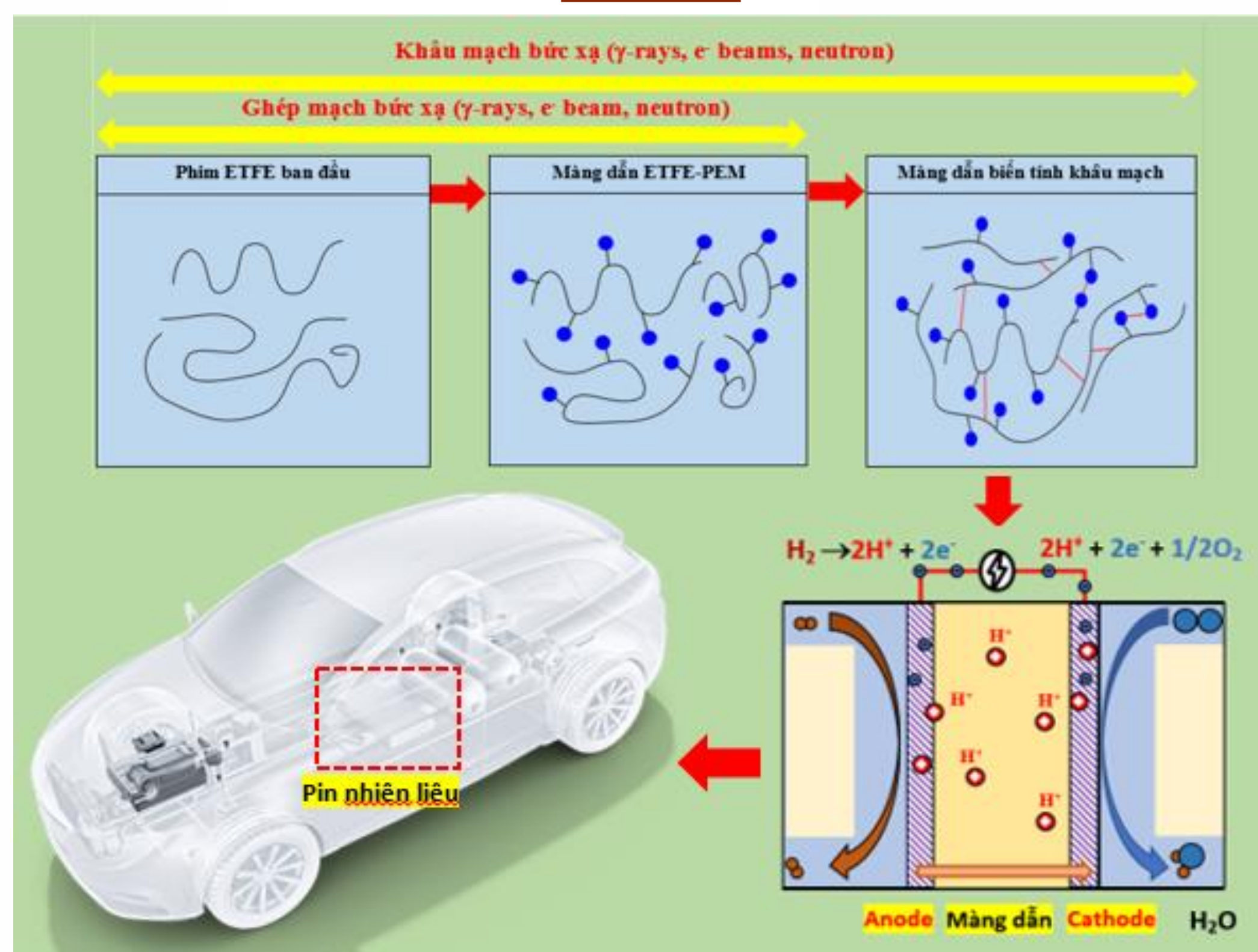
IMAGES OF THE PROJECT

Neutron irradiation system

XRD

Students, graduate students, and postgraduate in the Lab

Sample preparation at the Lab

Lab's member defend master's thesis

Project members discussed with Professor Gunther G. Scherer (Paul Scherrer Institute, Switzerland).

CONTACT INFORMATION

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