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## CURRICULUM VITAE

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2. Changkhamchom, S., and Sirivat, A. (2013) Polymer electrolyte membrane based on sulfonated poly(ether ketone ether sulfone) (S-PEKES) with low

methanol permeability for direct methanol fuel cell application. Polymer-Plastics Technology and Engineering, 52, 70-79.

3. Changkhamchom, S, and Sirivat, A. (2013) Composite proton exchange membranes of sulfonated poly(ether ketone ether sulfone) (S-PEKES) and molecular sieve with high mechanical strength for direct methanol fuel cell. *Submitted to* International Journal of Polymeric Materials.
4. Changkhamchom, S., and Sirivat, A. (2013) High proton conductivity ZSM-5 /sulfonated poly(ether ketone ether sulfone) (S-PEKES) composite proton exchange membrane for using in direct methanol fuel cell. *Preparation*

#### **Collaborated publications:**

1. Yimlamai, I., Niamlang, S., Chanthaanont, P., Kunanuraksapong, R., Changkhamchom, S., and Sirivat, A. (2011) Electrical Conductivity Response and Sensitivity of ZSM-5, Y, and Mordenite Zeolites towards Ethanol Vapor, Ionics, 56, 19–26.
2. Auimviriyavat, J., Changkhamchom, S., and Sirivat, A. (2011) Development of poly(ether ether ketone) (PEEK) with inorganic filler for direct methanol fuel cells (DMFCs). Industrial & Engineering Chemistry Research, 50, 12527-12533.
3. Macksasitorn, S., Changkhamchom, S., Sirivat, A., and Siemanond, K. (2012) Sulfonated poly(ether ether ketone) membrane and sulfonated poly(1,4-phenylene ether ether sulfone) membranes for vanadium redox flow battery. High Performance Polymer, 24(7), 603-608.
4. Taweekarn, N., Changkhamchom, S., and Sirivat, A. (2012) Synthesis and Characterization of sulfonated poly(aromatic imide-co-aliphatic imide) (S-coPI) membrane for direct methanol fuel cells. *Submitted to* Polymer Bulletin.

#### **Proceedings:**

1. Changkhamchom, S., and Sirivat, A. (2008, June 8-13) Sulfonated Poly(ether ether ketone)(S-PEEK) as derived from Bisphenol-S for a Proton Exchange Membrane (PEM) in Direct Methanol Fuel Cells (DMFC). Proceedings of the 3rd International Conference “Smart Materials, Structures and Systems” (CIMTEC 2008), Acireale (Catania District), Sicily, Italy.

2. Changkhamchom, S., and Sirivat, A. (2009, March 9) Development of proton exchange membrane from bisphenol S for using in direct methanol fuel cells. Proceedings of the Behavior and Mechanics of Multifunctional Materials and Composites 2009 (SPIE), San Diego, CA, USA.
3. Changkhamchom, S., and Sirivat, A. (2011, May 3-5) Proton conductivity, methanol permeability, and thermal property of a novel sulfonated poly(arylene ether ketone sulfone) electrolyte membrane. Proceedings of the 7<sup>th</sup> Conference of Energy Network of Thailand (E-NETT 2011), Phuket Orchid Resort and Spa, Karon beach, Phuket, Thailand.

#### **Presentations:**

1. Changkhamchom, S., and Sirivat, A. (2008, December 19-20) Development sulfonated poly(ether ether ketone) for proton exchange membrane. Oral presented at the ChemBio tech'08, Singapore. **Oral Presentation**
2. Changkhamchom, S., and Sirivat, A. (2010, April 1-3) Electrical properties and methanol permeability of synthesized sulfonated poly(ether ketone ether sulfone) (S-PEKES). Oral presented at the RGJ-Ph.D. Congress XI, Pattaya, Chonburi, Thailand. **Oral Presentation**
3. Changkhamchom, S., and Sirivat, A. (2008, March 10-14) Development of poly(ether ether ketone) (PEEK) derived from bisphenol-S as proton exchange membrane (PEM) in direct methanol fuel cells (DMFC). Poster presented at the 2008 APS March Meeting, New Orleans, Louisiana, USA. **Poster Presentation**
4. Changkhamchom, S., and Sirivat, A. (2008, April 22-25) Development of poly(ether ether ketone) (PEEK) derived from 4,4'-sulfonyldiphenol for Proton Exchange Membrane (PEM) in Direct Methanol Fuel Cells (DMFC). Poster presented at the Smart/Intelligent Materials And Nano Technology 2008 & 2<sup>nd</sup> International workshop on Functional Materials and nanomaterials (SmartMat'08-IWOFM-2), Chiang Mai, Thailand. **Poster Presentation**
5. Changkhamchom, S., and Sirivat, A. (2008, June 8-13) Sulfonated poly(ether ether ketone) (S-PEEK) as derived from bisphenol-S for a proton exchange membrane (PEM) in direct methanol fuel cells (DMFC). Poster presented at the

- 3rd International Conference “Smart Materials, Structures and Systems” (CIMTEC 2008), Acireale (Catania District), Sicily, Italy. **Poster Presentation**
6. Changkhamchom, S., and Sirivat, A. (2008, August 19-20) Synthesis of Sulfonated Poly(ether ether ketone) for Proton Exchange Membrane. Poster presented at the Thai-Japan Joint Symposium on Advances in Materials Science and Environmental Technology, Bangkok, Thailand. **Poster Presentation**
  7. Changkhamchom, S., and Sirivat, A. (2008, November 6-8) Sulfonated poly(ether ether ketone) for proton exchange membrane (PEM). Poster presented at the Nano Thailand Symposium 2008 (NTS 2008) International Conference & Exhibition, Bangkok, Thailand. **Poster Presentation**
  8. Changkhamchom, S., and Sirivat, A. (2009, March 9) Development of proton exchange membrane from bisphenol S for using in direct methanol fuel cell. Poster presented at the Behavior and Mechanics of Multifunctional Materials and Composites 2009 (SPIE), San Diego, CA, USA. **Poster Presentation**
  9. Changkhamchom, S., and Sirivat, A. (2009, March 16-20) Development of S-PEEK Electrolyte Membrane for Using in Direct Methanol Fuel Cell (DMFC). Poster presented at the APS March Meeting 2009, Pittsburgh, Pennsylvania, USA. **Poster Presentation**
  10. Changkhamchom, S., and Sirivat, A. (2009, June 14-18) Development of Polymer Electrolyte Membrane (PEM) from Bisphenol S for Using in Direct Methanol Fuel Cell (DMFC). Poster presented at the SPIE Europe Optical Metrology, Munich, Germany. **Poster Presentation**
  11. Changkhamchom, S., and Sirivat, A. (2009, August 7) Synthesis of sulfonated poly(ether ketone ether sulfone) (S-PEKES) and the degree of sulfonation effect in its properties. Poster presented at the RGJ Seminar Series LXII Advanced Materials, Bangkok, Thailand. **Poster Presentation**
  12. Changkhamchom, S., and Sirivat, A. (2011, May 3-5) Proton conductivity, methanol permeability, and thermal property of a novel sulfonated poly(arylene ether ketone sulfone) electrolyte membrane. Poster presented at the 7<sup>th</sup> conference on Energy Network of Thailand, Bangkok, Thailand. **Poster Presentation**
  13. Changkhamchom, S., and Sirivat, A. (2011, May 29-31) Modification of poly(ether ether ketone) (PEEK) derived from bisphenol-S as proton exchange

- membrane (PEM). Poster presented at the Second International Symposium Frontier in Polymer Science 2011, Lyon, France. **Poster Presentation**
14. Changkhamchom, S., and Sirivat, A. (2012, June 10-14) Novel sulfonated poly(ether ketone ether sulfone) proton exchange membrane for using in DMFC. Poster presented at the 4<sup>th</sup> International Conference “Smart Materials, Structures and Systems”, Montecatini Terme, Tuscany, Italy. **Poster Presentation**
  15. Macksasitorn, S., Changkhamchom, S., Sirivat, A., and Siemanond, K. (2013, March 1-14) Proton exchange membrane based on sulfonated poly(ether ether ketone) and sulfonated poly(1,4-phenylene ether ether sulfone) for vanadium redox flow battery. Poster presented at the SPIE Smart Structures/NDE 2013, San Diego, California, United States. **Poster Presentation**
  16. Changkhamchom, S., and Sirivat, A. (2013, April 22) Sulfonated poly(ether ketone ether sulfone) (S-PEKES)/zeolite proton exchange membrane for direct methanol fuel cell. Oral presented at the 1<sup>st</sup> Annual Symposium of Conductive and Electroactive Polymers (CEAP 2013), Bangkok, Thailand. **Oral Presentation**