Prof. Mei-Jywan Syu

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NanoFunctional Materials and Biosensing Lab

Research Interests

1. Synthesis, modification, characterization, and applications of **molecularly imprinted polymeric** (organic, hybrid organic-inorganic, electro-conducting, fluorescent, polymeric matrix doped with ionic liquid, etc.) **materials**, in the shape of granules, films or core-shells. The applications may include: specific binding; fluorescence detection; electro-detection (amperometric, potentiometric, impedance, QCM); column (chromatographic) separation/ purification.
2. **Urinary biosensing chip system**
3. Synthesis of **biocompatible nanomaterials** (nano-spheres, nanofilms, nanofibers) for the targeting, hyperthermia, and biosensing applications
4. **Supramolecular polymer, metal-organic framework (MOF)** for sorption, sensing, and catalysis

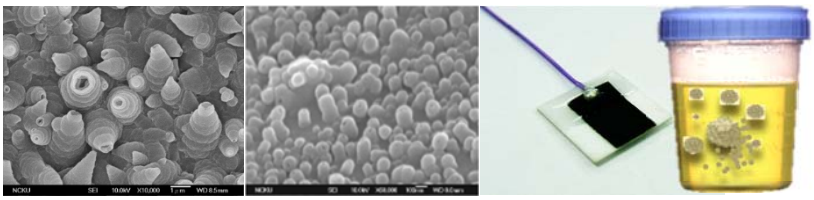
Selected Publications

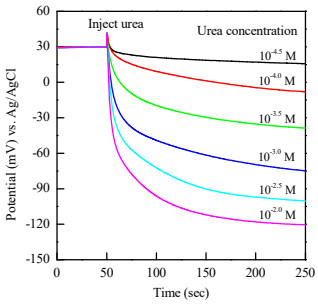
1. CH Luo, **Mei-Jywan Syu**, SC Shiesh, et al. Urine microchip sensing system. Ed., CM Kyung, H Yasuura, YP Liu, YL Lin. Smart Sensors and System: Innovations for Medical, Environmental, and IoT Applications. Springer Verlag. 359–384, 2017.
2. **Mei-Jywan Syu**, et al. Sensors 16(4), 474, 2016.
3. **Mei-Jywan Syu***, Shih-Hsun Lin, SC Shiesh. A test device for electrochemical analysis on leukocyte esterase. Taiwan Patent, 2016–2026
4. **Mei-Jywan Syu**, et al. Langmuir, 27(12), 7595, 2011.
5. **Mei-Jywan Syu**, et al. Sensors and Actuators B, 164, 29, 2012.
6. **Mei-Jywan Syu***, et al. Chemical Engineering Journal, 168, 1369, 2011.
7. **Mei-Jywan Syu**, et al. Electrophoresis, 32(8), 931, 2011.
8. **MJ Syu***, etc. Analytical Chemistry: **(1)** 82(21), 8821, 2010; **(2)** 81(6), 2098, 2009.
9. **MJ Syu***, etc. Biosensors and Bioelectronics: **(1)** 24, 2671, 2009; **(2)** 22, 1694, 2007; **(3)** 22(4), 550, 2006; **(4)** 21(12), 2345, 2006.
10. **MJ Syu***, YM Nian, YS Chang, XZ Lin, SC Shiesh, TC Chou. J Chromat A 1122, 1/2, 54, 2006.
11. **MJ Syu***, etc. Biomaterials: **(1)** 27(9), 2083, 2006; **(2)** 26, 4684, 2005; **(3)** 26, 2759, 2005.
12. **M Syu***, etc. Analytica Chim Acta: **(1)** 539, 97, 2005; **(2)** 539, 107, 2005; **(3)** 504(1), 167, 2004
13. **MJ Syu***, BJ Chen, ST Chou. Ind Eng Chem Res 42, 6862, 2003.
14. **M Syu***. Review – Biological production of 2,3-BDL, invited, Appl Microbiol Biotechnol 55, 10, 2001.

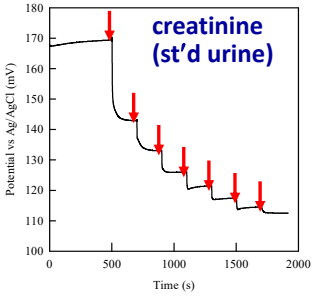
Biomedical sensing Chip

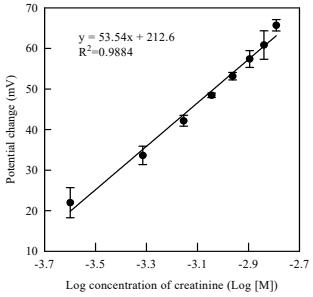
Portable biochips; POCT; homecare

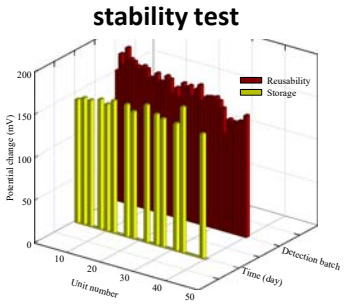
For urea, creatinine, albumin, leukocyte, nitrite, bilirubin (serum or urine specimen)





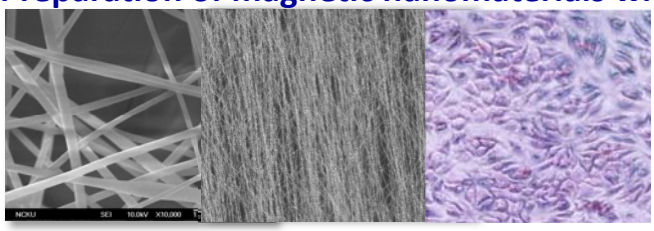


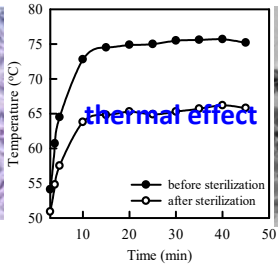


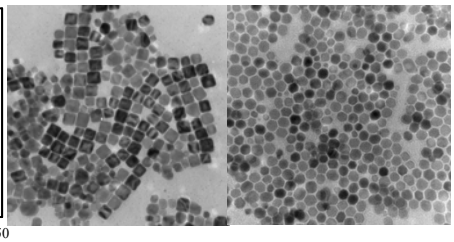


Qualcomm X-prize 2nd award 2017

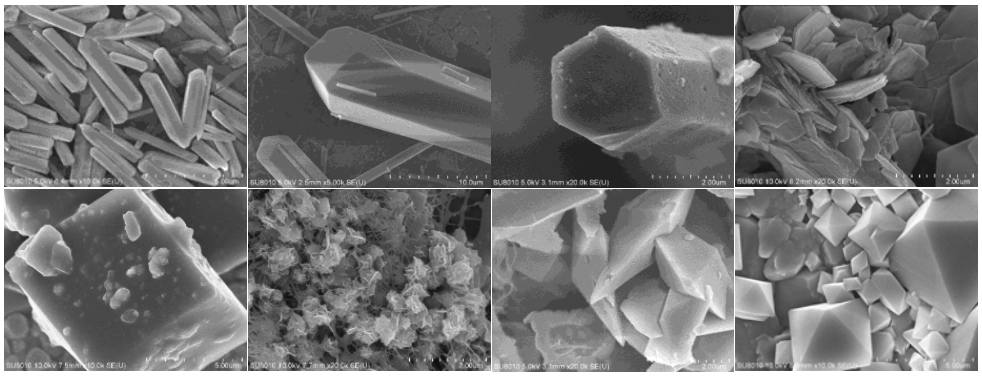
Preparation of magnetic nanomaterials with surface modification

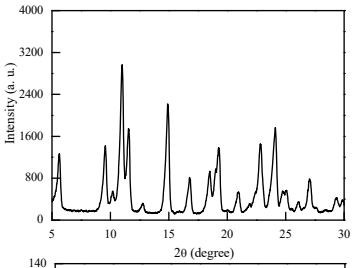


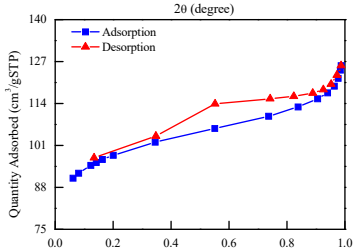




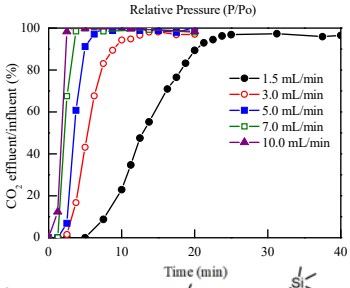
Preparation of metal-organic frameworks and applications





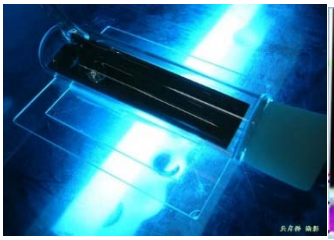


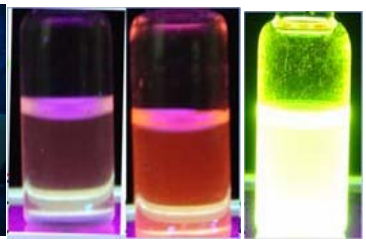
	CoTPyP
BET surface area (m^2/g)	333
Langmuir surface area (m^2/g)	442

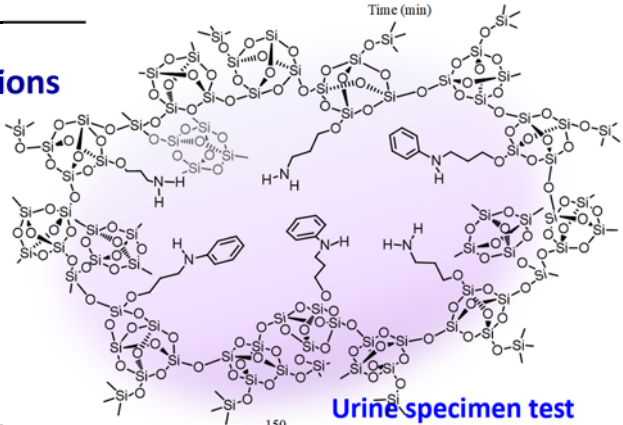


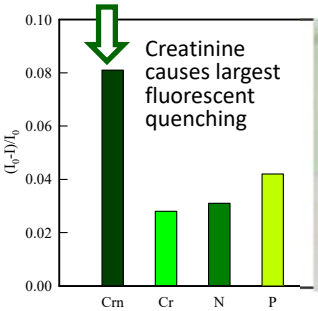
Sample	Surface area (BET, m^2/g)	CO_2 uptake (mmol/g STP)	CO_2 uptake rate (mmol/g/h STP)
CuTBB[this work]	**620**	**1.02**	**6.12**
CoTPyP	**357**	**1.47**	**7.06**
zeolite	90.7	0.58	4.64

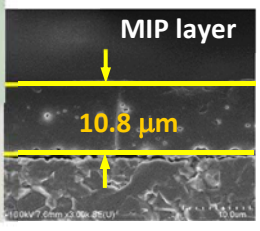
Molecularly imprinted polymer (MIP) with applications











Urine specimen test