

**The preparation and mechanistic study of highly effective PtSnRu ternary
nanorods catalysts toward ethanol oxidation reaction**

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Table S1. Comparison of EOR activity between PtSnRu-2 and other Pt-Sn based ternary catalysts taken from literature.

Samples	Electrolyte	Onset potential (V)	Mass Activity (mA/mgPt)	Ref.
Pt ₃ RhSn	0.5 M EtOH + 0.1 M HClO ₄	0.29	MA _{0.45} = 23.4	J. Mater. Chem. A, 2018, 6, 11270
PtSnSiO ₂	0.5M EtOH + 0.5 M H ₂ SO ₄	0.36	MA _{0.6} = 60.1	Int. J. Hydrogen Energy, 2017, 42, 26897
PtRhSn	0.5 M EtOH + 0.5 M H ₂ SO ₄	0.29	MA _{0.6} = 46.8	ACS. Catal., 2014, 4, 1859
PtSnFe		0.18	MA _{0.35} = 13.2	
PtSnNi	1 M EtOH + 0.05 M H ₂ SO ₄	0.19	MA _{0.35} = 10.6	J. Power Sources, 2015, 284, 623
PtSnPd		0.19	MA _{0.35} = 9.3	
PtSnRu		0.24	MA _{0.35} = 3.1	
PtRhSn/C	0.5 M EtOH + 0.1 M HClO ₄	0.35	MA _{0.45} = 12.0	ChemElectroChem, 2015, 2, 903
PtSnRu	1M EtOH + 0.5 M H ₂ SO ₄	0.23	MA _{0.6} = 27.5	Int. J. Hydrogen Energy, 2011, 36, 11034
PtSnRu	1M EtOH + 0.5 M H ₂ SO ₄	0.31	MA _{0.6} = 0.02	Electrochim. Acta 2017, 225, 207
PtSnRu	1M EtOH + 0.5 M H ₂ SO ₄	0.30	MA _{0.6} = 17.5	Electrochem. Commun. 2009, 11, 2161
PtSnRu	1M EtOH + 0.5 M H ₂ SO ₄		MA _{0.5} = 11.4	J. Power Sources, 2007, 166, 87
Pt ₇₅ Sn ₁₂ Ta ₆ Ru ₇ /C	1M EtOH + 0.5 M H ₂ SO ₄	0.20	MA _{0.46} = 15.9 MA _{0.7} = 30.8	Catalysts, 2019, 9, 277
PtSnRu ₂	1M EtOH + 0.5 M H ₂ SO ₄	0.25	MA _{0.35} = 17.1 MA _{0.45} = 36.5 MA _{0.6} = 86.0	This study