

Synthesis of Bi-heterocyclic Sulfonamides as Tyrosinase Inhibitors: Lineweaver-Burk Plot Evaluation and Computational Ascriptions

Muhammad Athar Abbasi^{1,*}, Zia-ur-Rehman¹, Aziz-ur-Rehman¹, Sabahat Zahra Siddiqui¹, Majid Nazir¹, Mubashir Hassan², Hussain Raza³, Syed Anan Ali Shah⁴,
Sung-Yum Seo^{3,*}

¹ *Department of Chemistry, Government College University, Lahore-54000, Pakistan*

² *Institute of Molecular Biology and Biotechnology, The University of Lahore, Pakistan*

³ *College of Natural Sciences, Department of Biological Sciences, Kongju National University, Gongju, 32588, South Korea*

⁴ *Faculty of Pharmacy and Atta-ur-Rahman Institute for Natural Products Discovery (AuRIns), Level 9, FF3, Universiti Teknologi MARA, Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor Darul Ehsan, Malaysia*

*Corresponding Authors: Dr. Muhammad Athar Abbasi, E-mail: abbasi@gcu.edu.pk Tel: (+92)-42-111000010 Ext. 266 and Prof. Dr. Sung-Yum Seo, E-mail: dnalove@kongju.ac.kr Tel: (+82)-416-8508503

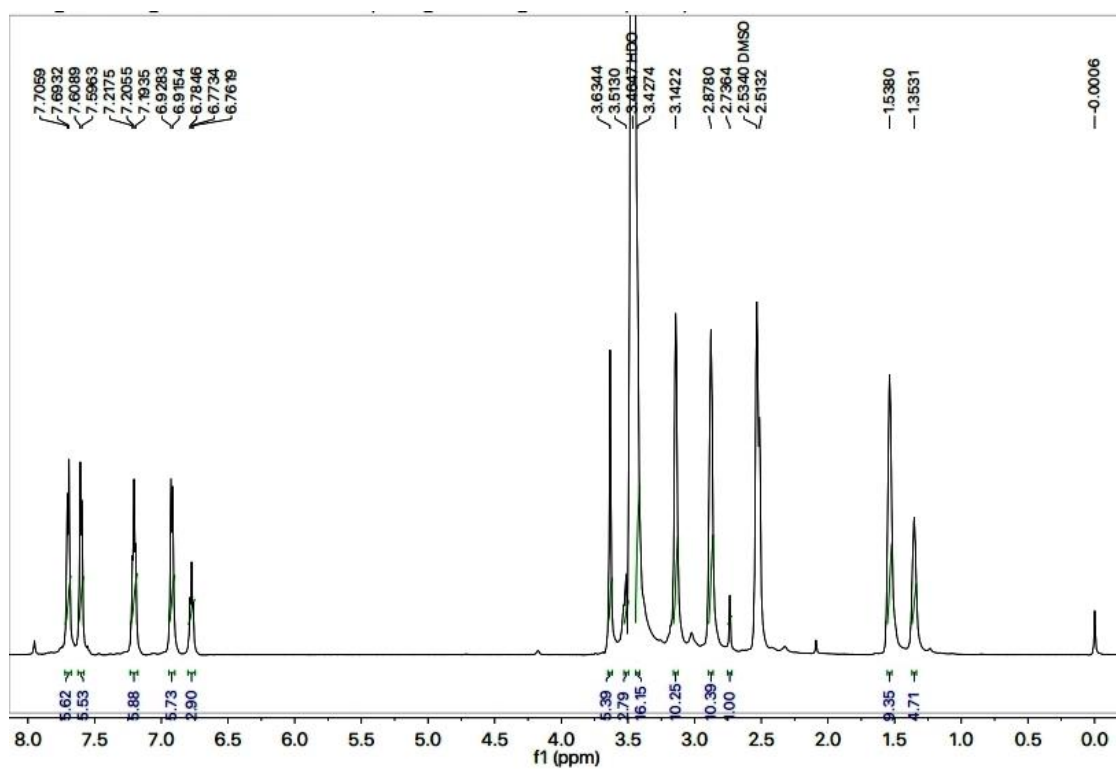


Fig. S1. $^1\text{H-NMR}$ spectrum of 5.

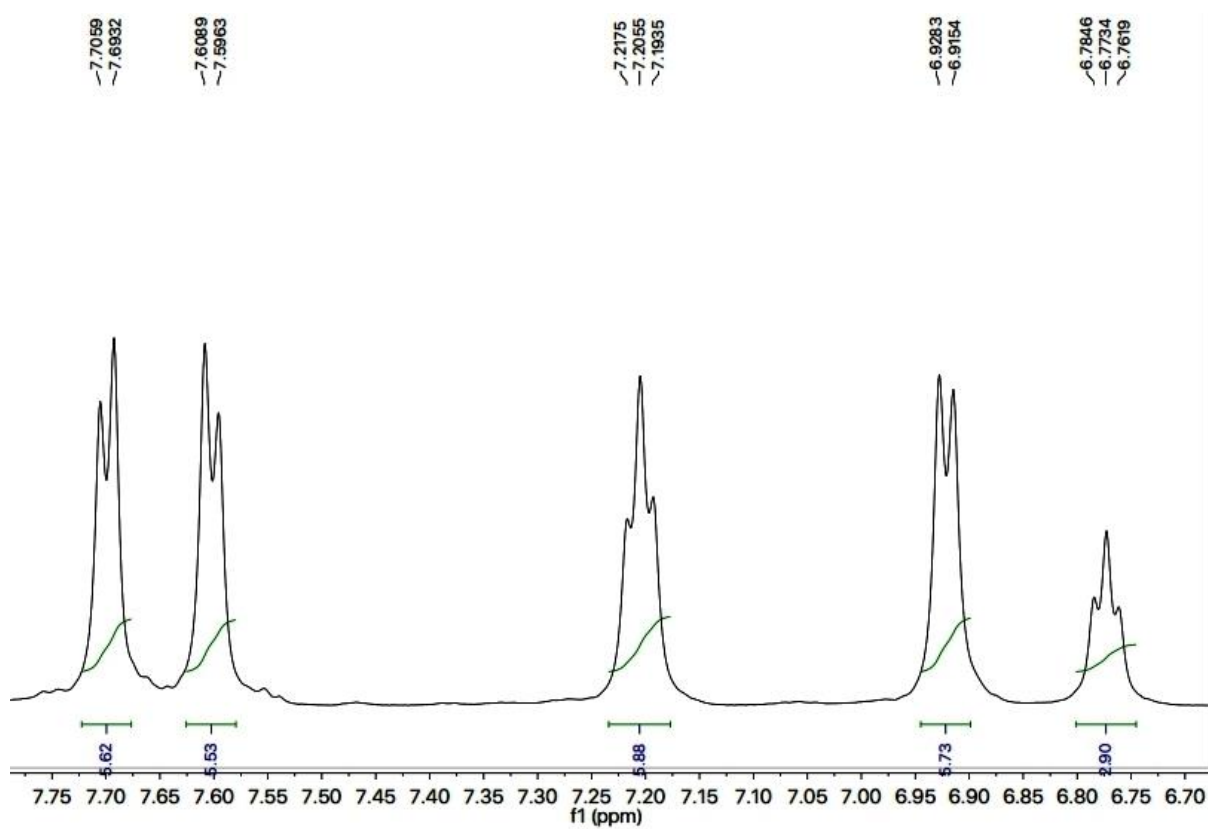


Fig. S2: Aromatic region of $^1\text{H-NMR}$ spectrum of 5.

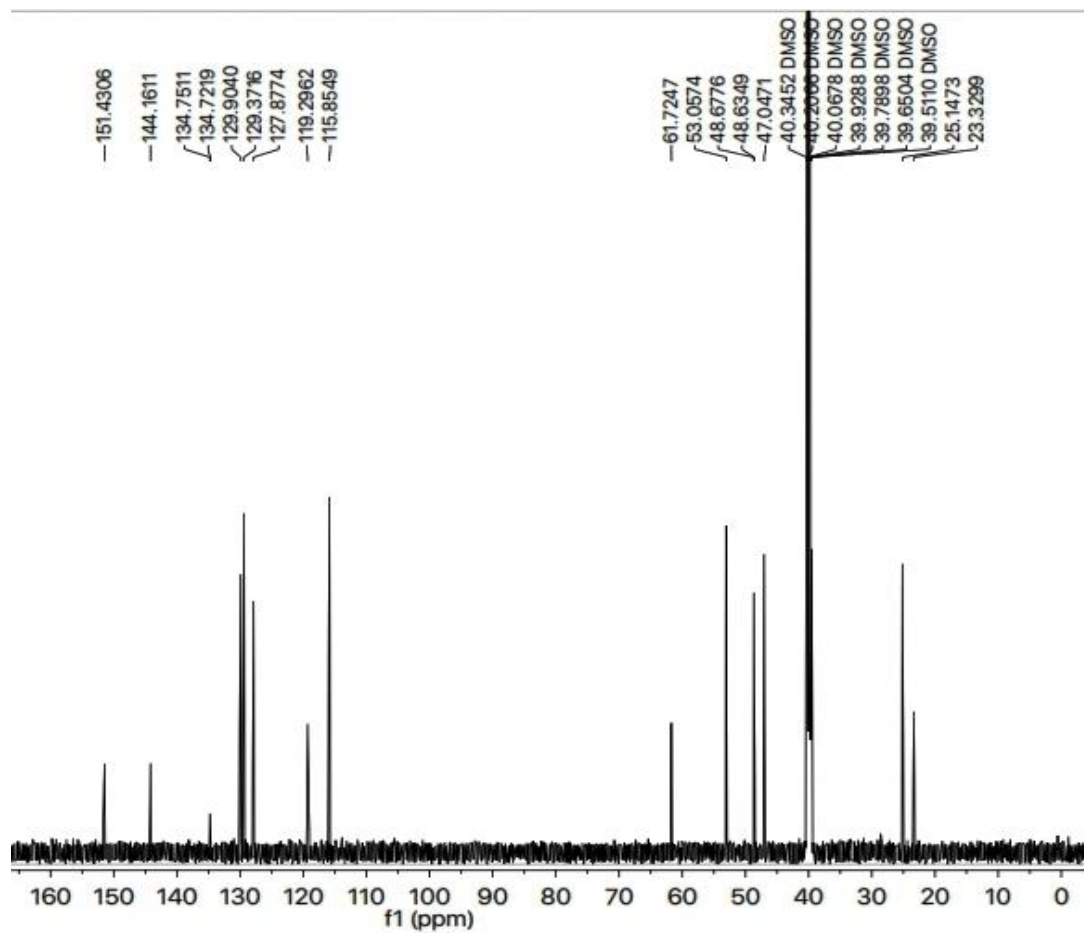


Fig. S3: ¹³C-NMR spectrum of 5.

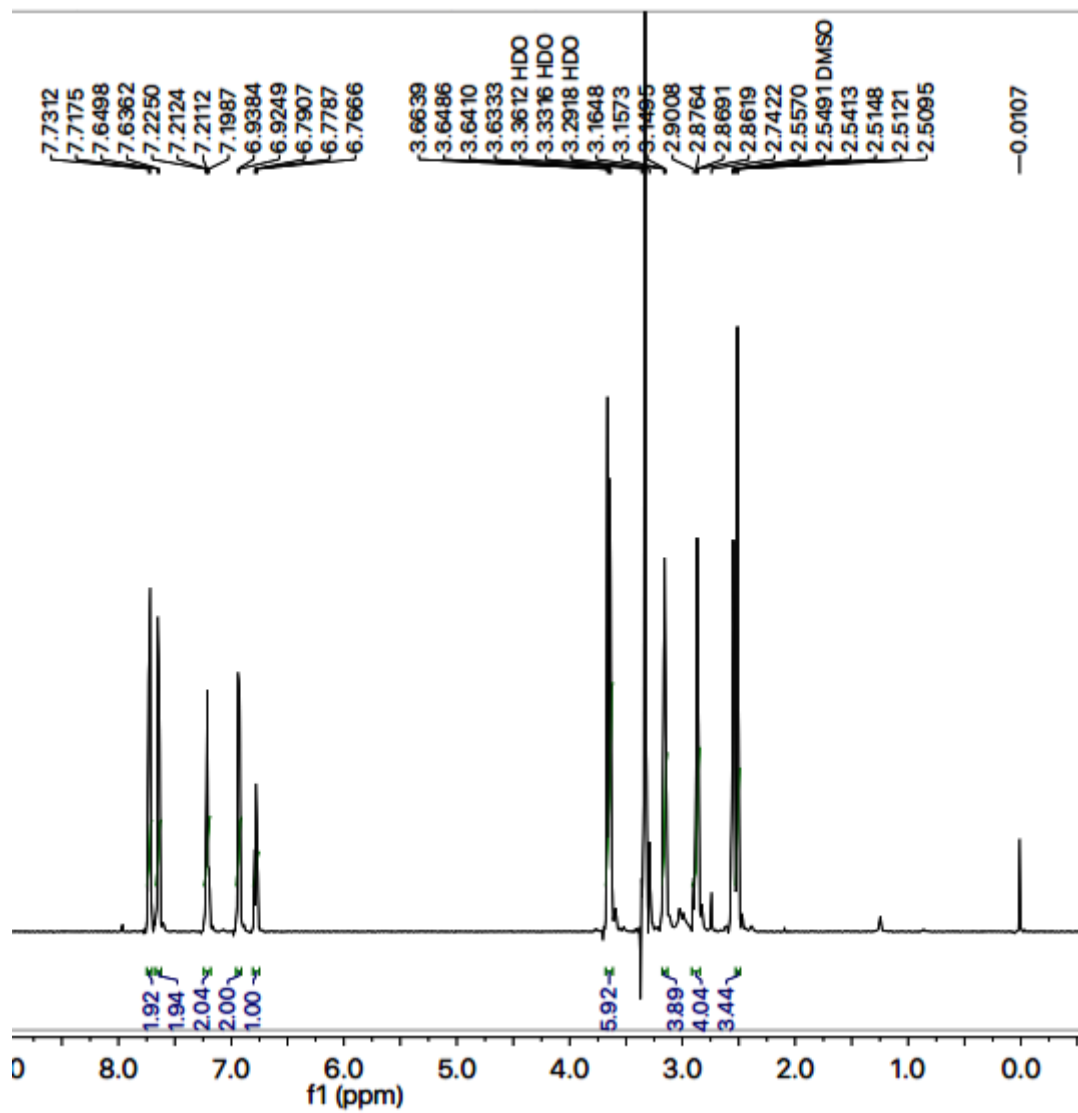


Fig. S4: ¹H-NMR spectrum of 8.

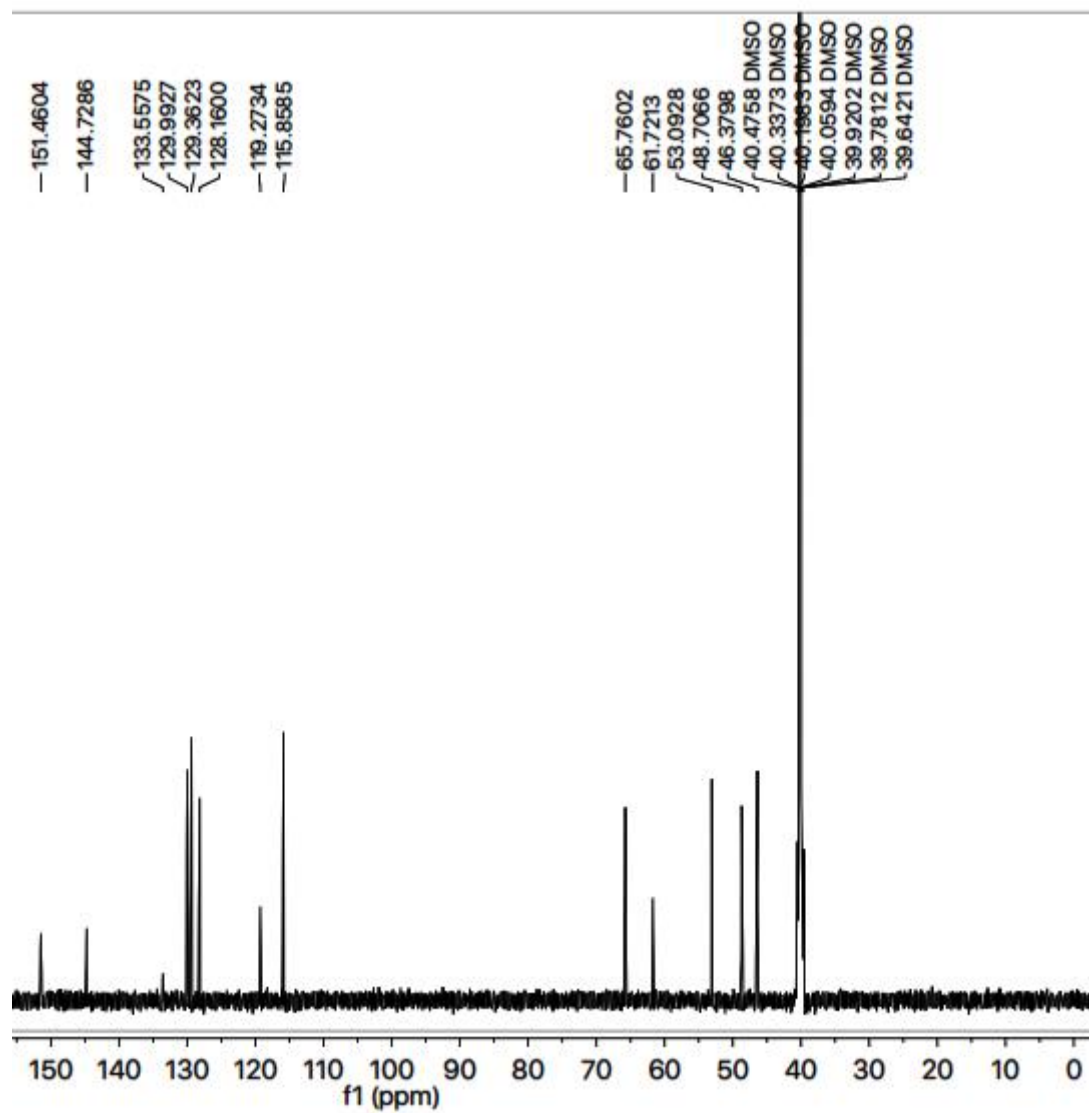


Fig. S5: ^{13}C -NMR spectrum of 8.

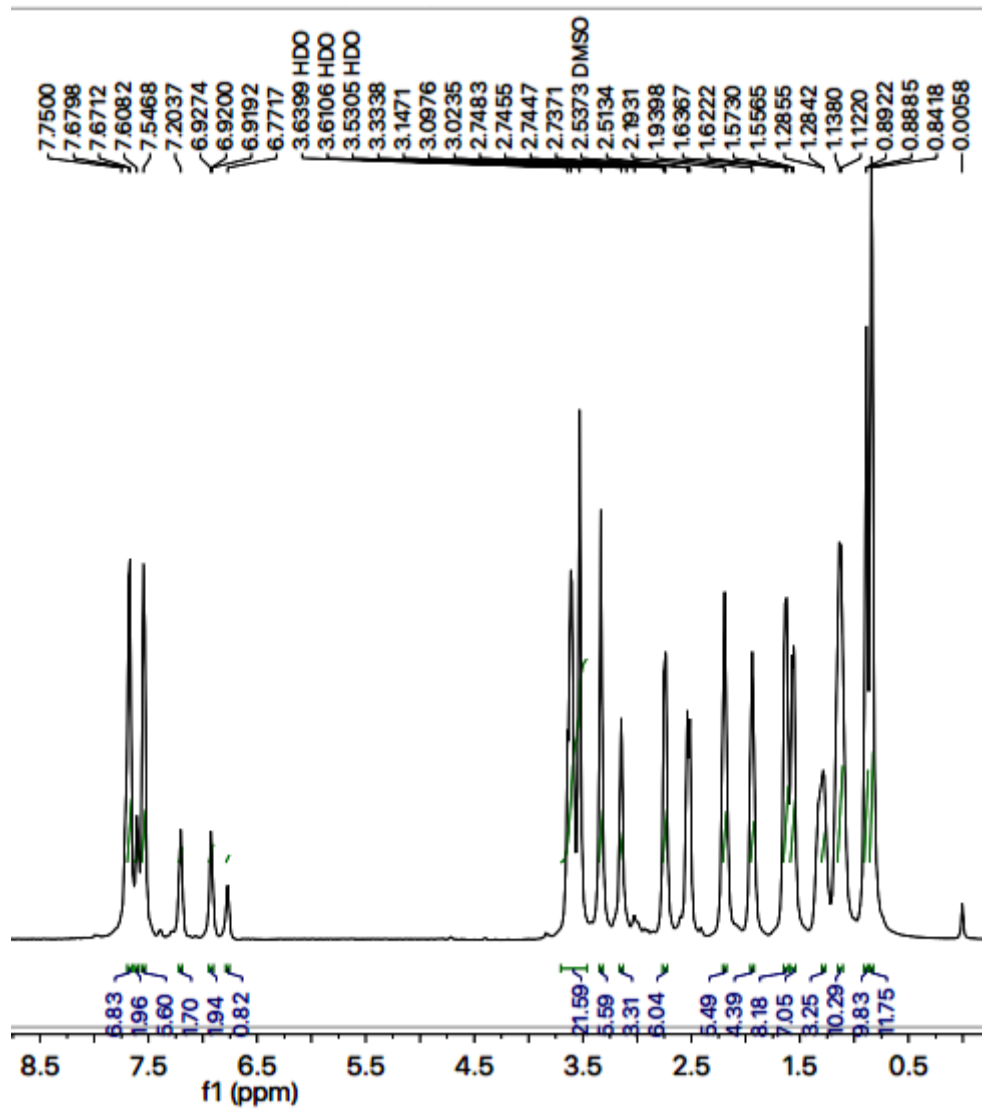


Fig. S6: $^1\text{H-NMR}$ spectrum of 11.

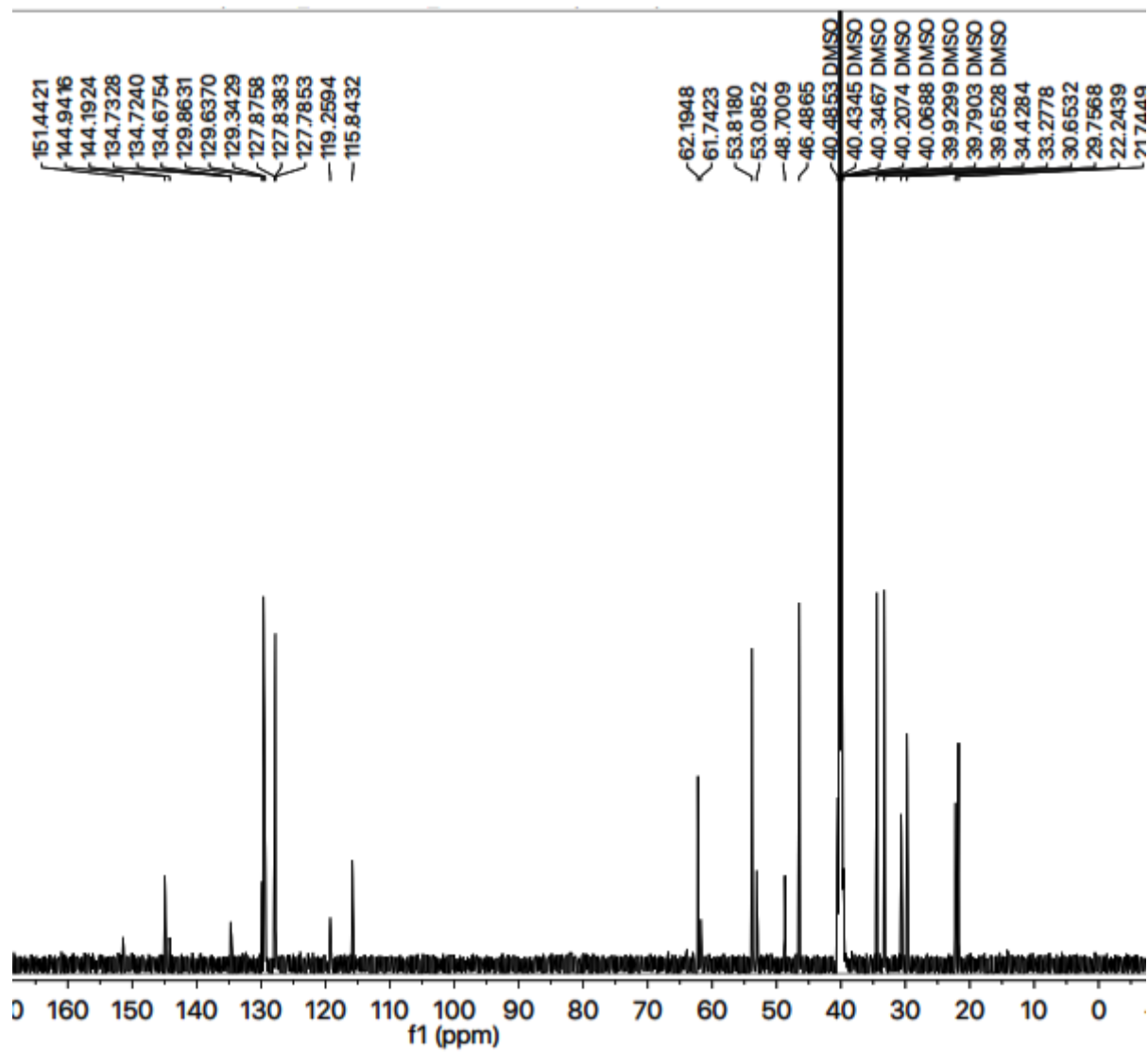


Fig. S7: ^{13}C -NMR spectrum of 11.

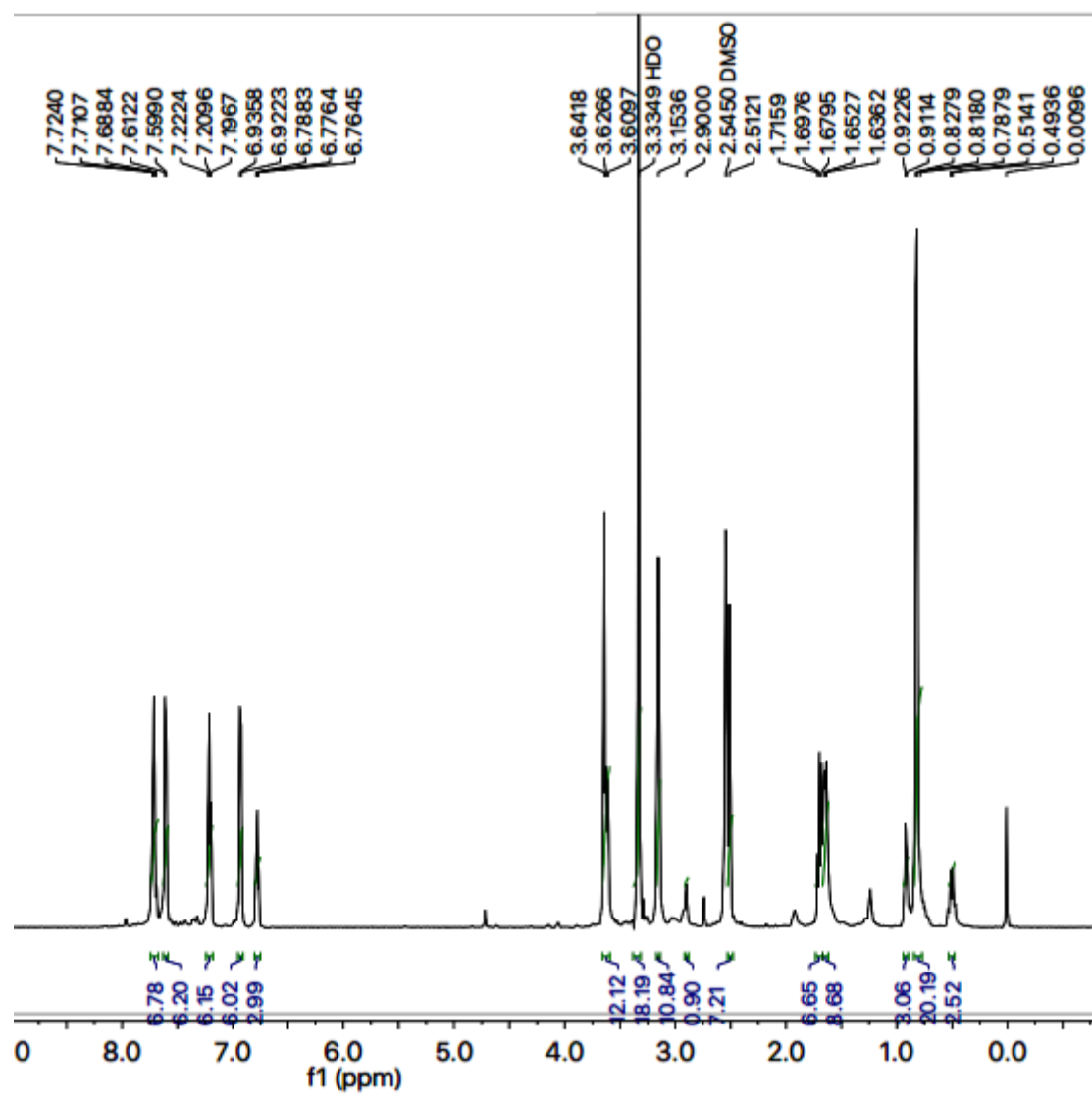


Fig. S8: ¹H-NMR spectrum of 14.

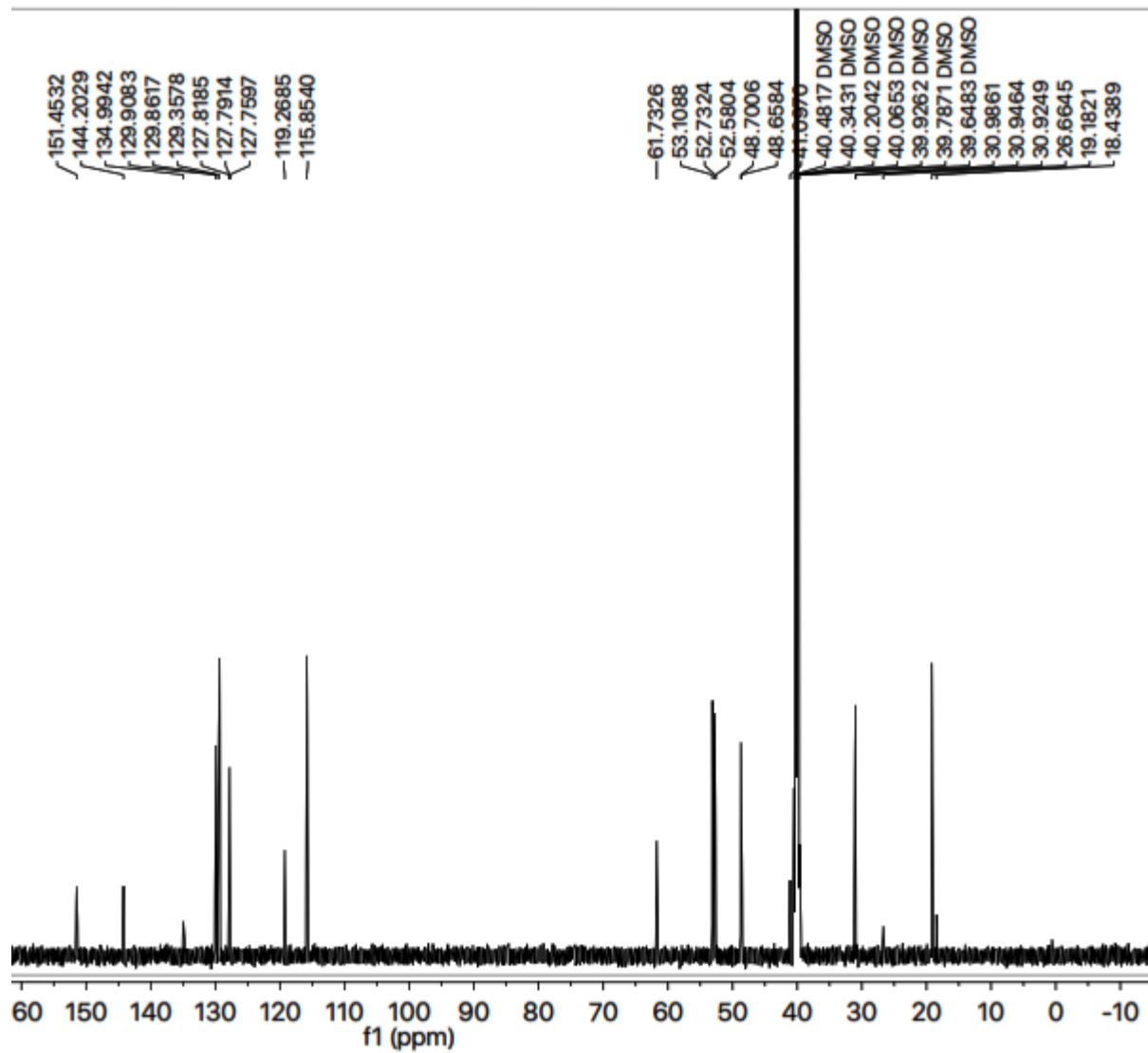


Fig. S9: ^{13}C -NMR spectrum of 14.