Jacutingaite, a recently discovered Brazilian naturally occurring mineral \cite{1,2}, has shown to be the first experimental realization of the Kane-Mele topological model \cite{3}. In this talk we will shown that the class of materials M2NX3 (M =Ni, Pt, Pd; N =Zn, Cd, Hg; and X=S, Se, Te), share Jacutingaite’s key features, i.e., high stability of its transition metal dichalcogenide like structure (Fig. 1), and topological phase. By employing first-principles calculations we extensively characterize the energetic stability of this class while showing a common occurrence of the Kane-Mele topological phase. Here we found Pt-based materials surpassing Jacutingaite’s impressive topological gap (Fig. 2) and lower exfoliation barrier while retaining its stability.

References

\cite{1} A. R. Cabral, H. F. Galbiatti, R. Kwitko-Ribeiro, and B. Lehmann. Terra Nova 20, 32-37 (2008).

\cite{2} Anna Vymazalová, Frantisek Laufek, Milan Drábek, Alexandre R. Cabral, Jakub Haloda, Tamara Sidorinová, Bernd Lehmann, Henry F. Galbiatti, and Jan Drahokoupil. The Canadian Mineralogist 50, 431-440 (2012).

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**Figures**

\textbf{Figure 1:} Jacutingaite’s class structure in relation to the transition metal dichalcogenide.

\textbf{Figure 2:} Topological gap for the class of M2NX3 compounds.