Applications of MoS_2 as a Two-Dimensional Materials Beyond Graphene

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Overview

Motivations

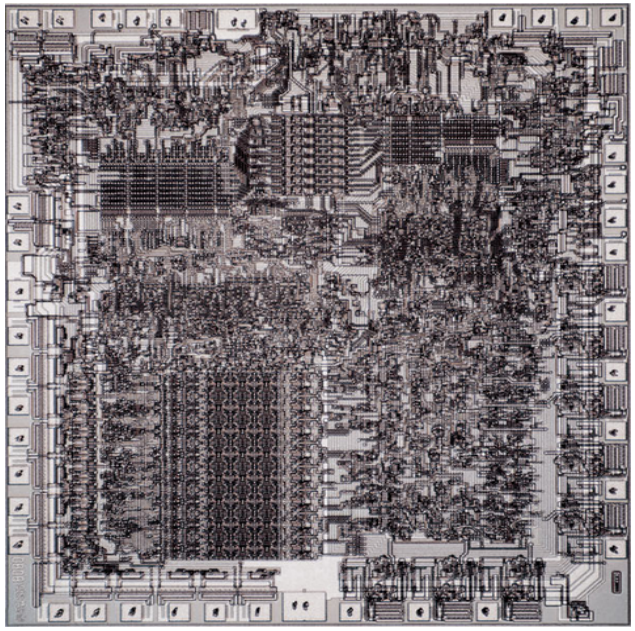

Figure: The Intel 8080 introduced in 1974 consisted of approximately 5,000 transistors

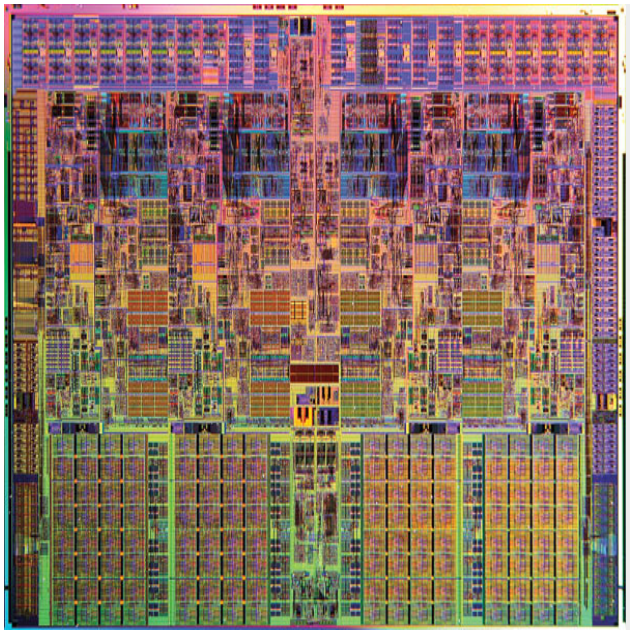

Figure: The Intel Core i7 in 2008 consisted of approximately 731 million transistors

[Grifantini, 2008]

Discovery of Graphene

Properties of Graphene

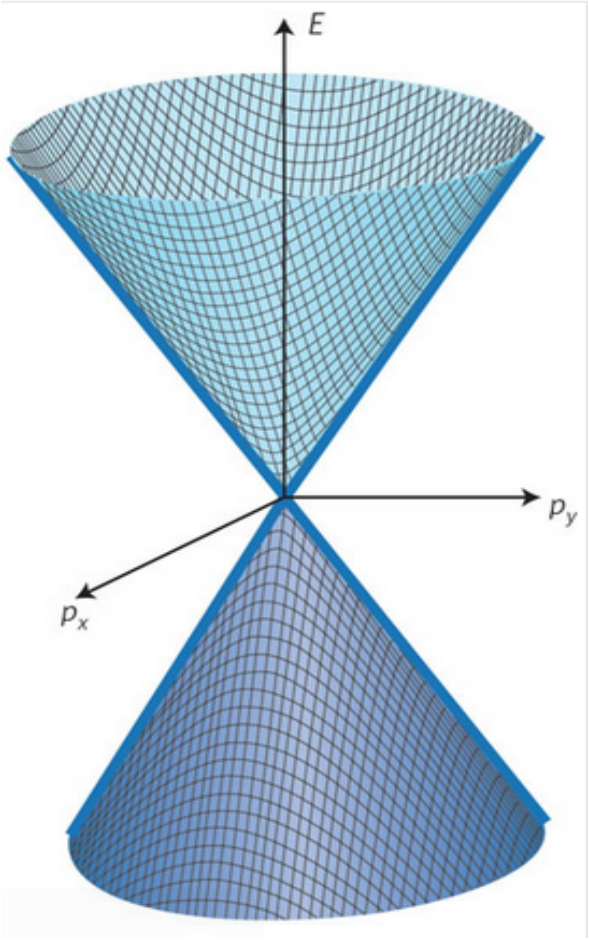

Figure: Electronic band structure of graphene [Fuhrer, 2010].

Transition Metal Dichalcogenides

Figure: first figure

Figure: second figure

Properties of MoS_2

Micromechanical Exfoliation

MoS_2 in FETs

MoS_2 in FETs Continued

Outlook and Conclusion

References

Fuhrer, M.S. (2010)

Graphene: Ribbions piece-by-piece

Nature Materials (9), 611–612.

Grifantini, K. (2008)

Moore's Law

MIT Technology Review
http://www.technologyreview.com/photoessay/411485/moores-law/.