

# Analisis kristalografi pada timah dan paduannya (Sn-Cu/Bi/Zn) dan pengaruh tekanan terhadap fenomena whiskers menggunakan analisis rietveld = Crystallography analysis of tin and its alloy (Sn-Cu/Bi/Zn) and influence of pressure on whiskers phenomena by using rietveld analysis

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## Abstrak

[<b>ABSTRAK</b><br>

Material solder saat ini banyak menggunakan Sn-Pb. Saat ini ada permasalahan lingkungan yaitu Pb yang bersifat racun. Selain itu terjadi fenomena Whiskers yang dapat menyebabkan hubungan pendek pada peralatan elektronik

Telah dilakukan sintesa material solder bebastimbal Sn-0.7Cu-xBi/Zn. Pada sampel dilakukan karakterisasi x-ray difraksi. Dilakukan analisis Rietveld untuk memperoleh parameter kristalografi dan ekstraksi daerah bidang tertentu untuk melihat fenomena whisker.

Hasil analisis Rietveld memperlihatkan penambahan unsur Bismut dengan konsentrasi tertentu pada paduan Sn-0.7Cu-xBi dapat merubah tekstur pada bidang kristalografi tertentu ditandai dengan meningkatnya kerapatan pole figure yang dapat diartikan keseragaman orientasi kristalit yang dapat menjadi penghambat whiskers di bidang tersebut.;

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Solder material is using Lead (Pb) recently. Toxicity of lead was creating environment issue now. Beside of that whiskers phenomena could make short at electronics circuits.

Synthesis of Sn-0.7Cu-xBi/Zn lead free solder materials have been conducted. These alloys were being characterized by using XRD diffractometer. Crystallographic parameters and texture of certain plane have been extracted to observe whiskers phenomena

The result from Rietveld refinement show that adding certain Bismuth concentration could change texture of Sn-0.7Cu-xBi alloy at certain crystall plane. This condition was being shown by high density of pole figure, means crystallite orientation more uniform. High density of pole figure at certain crystall plane could become whisker inhibitor.

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